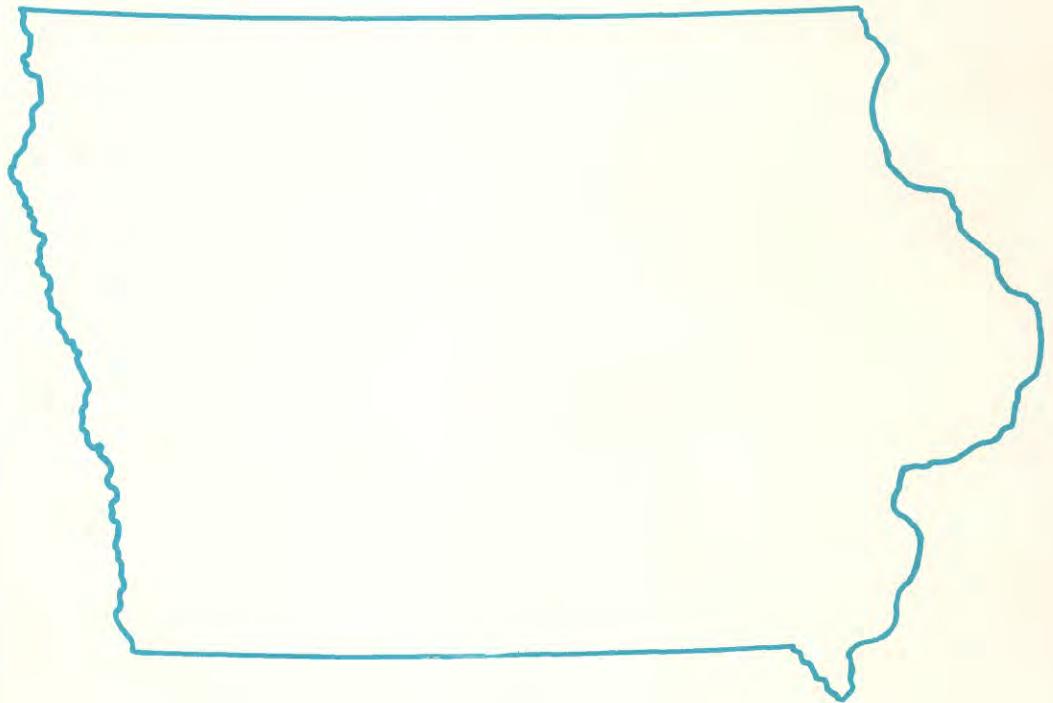




Water Resources Data Iowa Water Year 1983



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-83-1
Prepared in cooperation with the Iowa Geological
Survey and with other State and Federal agencies

CALENDAR FOR WATER YEAR 1983

1982

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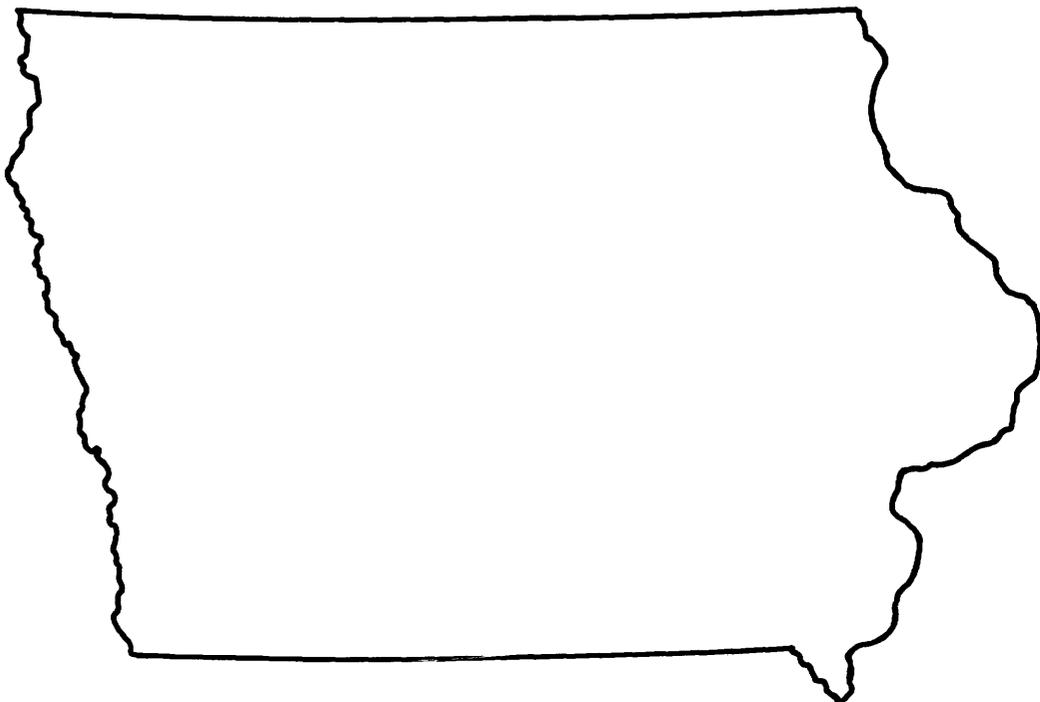
Hope you enjoy the text!
Best wishes,
Kay



Water Resources Data Iowa

Water Year 1983

by I.L. Burmeister, V.L. Spiers, P.J. Soenksen, and W.J. Matthes, Jr.



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-83-1

Prepared in cooperation with the Iowa Geological
Survey and with other State and Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in Iowa write to
District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

1984

PREFACE

This report of Iowa is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, and processing of the data, and to the publication of the report.

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This report was prepared in cooperation with the State of Iowa and with other agencies under the general supervision of J.M. Klein, District Chief, Iowa.

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GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

VII

[Letter after station name designates type of data:
(d) discharge, (c) chemical, (m) microbiological,
(t) water temperature (s) sediment]

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WATER RESOURCES DATA FOR IOWA, 1983

INTRODUCTION

Water resources data for the 1982 water year for Iowa consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels of ground-water wells. This report contains records for water discharge at 116 gaging stations; stage or contents at 7 lakes and reservoirs; water quality at 17 gaging stations, and water levels at 90 observation wells. Also included are data for 125 crest-stage partial-record stations. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Iowa.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, Virginia, 22304.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-83-1." These water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone, (319) 337-4191.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreement with the Survey in 1981 are:

Iowa Geological Survey, Donald L. Koch, director and state geologist

University of Iowa, Institute of Hydraulic Research, Robert G. Hering, dean of College of Engineering and John F. Kennedy, director

University of Iowa, Hygienic Laboratory, W.J. Hausler, Jr., director

Iowa Department of Transportation, Highway Division, Robert H. Given, director, and Vernon J. Marks, research engineer

Iowa State University, Richard E. Hasbrook, contracts and grants officer, and E. Robert Bauman, professor-in-charge; and Engineering Research Institute, Tom A. Austin, director.

City of Cedar Rapids, Donald Canney, mayor

City of Des Moines, Pete Creivaro, mayor protempore

City of Fort Dodge, Vincent B. Gardner, general manager, department of municipal utilities

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting flow records for 77 gaging stations. Assistance was also furnished by NOAA-National Weather Service, U.S. Department of Commerce.

The following organizations aided in collecting records:

Union Electric Co.; Des Moines Water Works; Waterloo Sewage Treatment Plant; University of Iowa; West Central Iowa Rural Water Association; and cities of, Charles City, Clear Lake, Denison, Iowa city, Marshalltown, Sioux City, and Waterloo.

Organizations that supplied data are acknowledged in station descriptions.

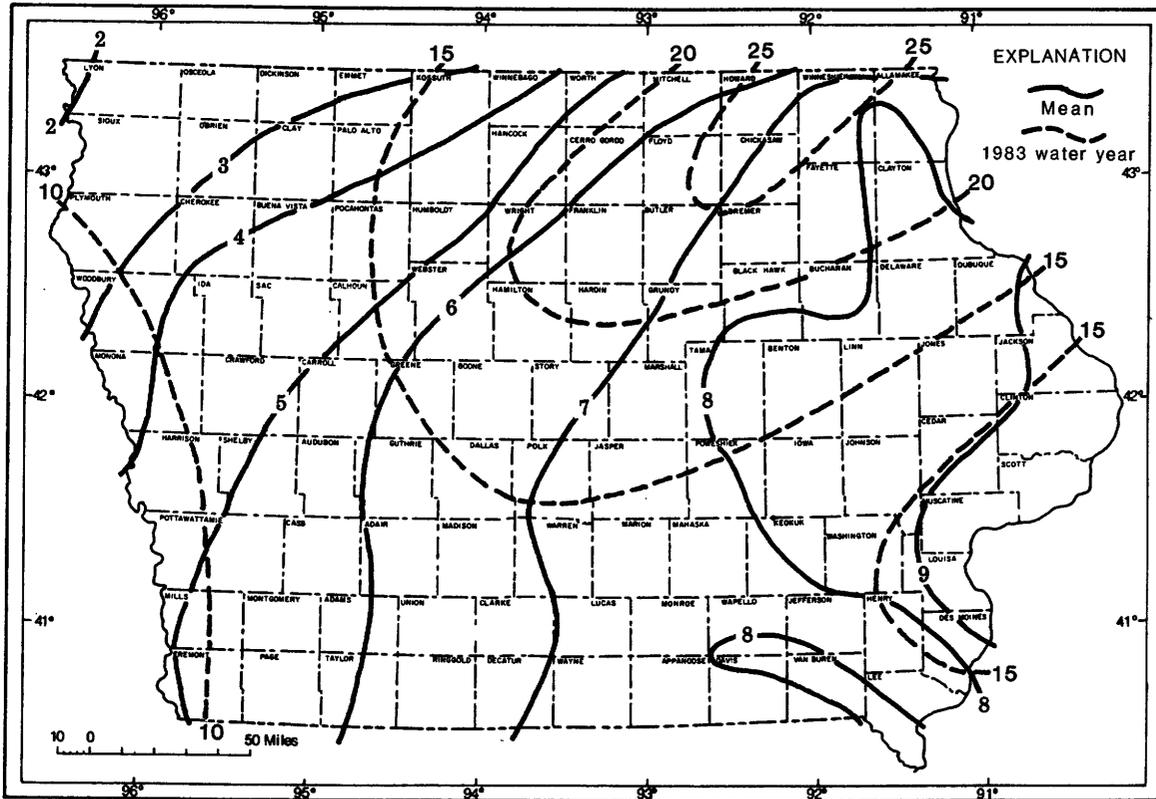


Figure 1.--Runoff, in inches, during 1983 water year compared with mean annual runoff for Iowa.

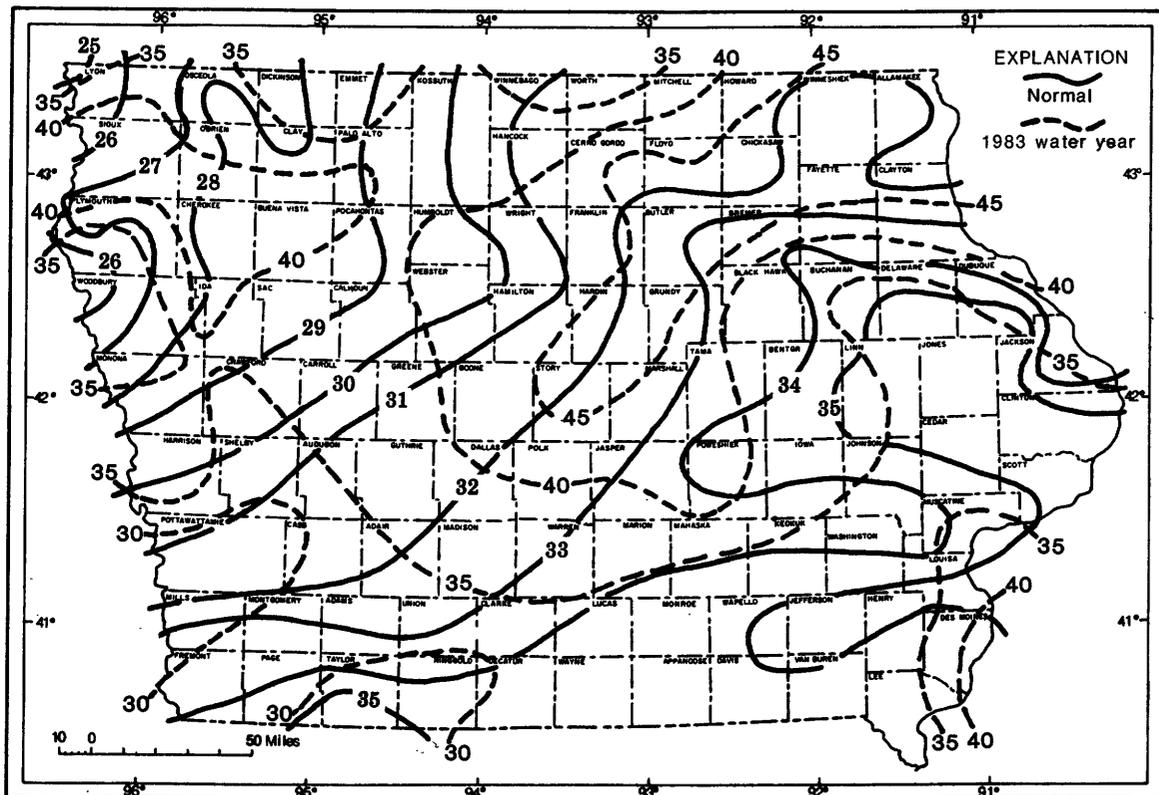


Figure 2.--Precipitation, in inches, during 1983 water year compared with normal annual precipitation for Iowa. (Data from Iowa Department of Agriculture, State Climatologist)

SUMMARY OF HYDROLOGIC CONDITIONS

Runoff for the 1983 water year in Iowa was the second highest of record in spite of the serious drought. Average annual runoff ranges from 2 inches in the northwest to 9 inches in the east with an areal weighted average of 6.4 inches. During 1983, the runoff varied from 10 inches in the west to more than 25 inches in the northeast with a weighted average of 15.9 inches (fig. 1). The weighted average runoff was computed using stations totalling 52,080 square miles or 93 percent of the total area of 56,239 square miles.

Runoff exceeded that for previous years of record for 11 of the 26 streamflow stations that represent the major river basins of Iowa. The previous high runoff of record at 21 of these 26 stations occurred in the 1973 water year. The weighted average runoff for the 1973 water year was 16.6 inches compared to 15.9 inches in 1983 (table 1). There was no serious drought in 1973 and there were outstanding floods in the Wapsipinicon, Iowa, Skunk, and Des Moines River basins (see Water Resources Data for Iowa, 1973).

Precipitation for the 1983 water year was much greater than average, ranging from 35 inches in the northwest to 45 inches in the northeast. The normal precipitation for the standard period, 1941-70, was 25 inches in the northwest to 35 inches in the southeast (fig. 2). From data compiled by the State Climatologist, Iowa Department of Agriculture, (written commun., 1983), the average precipitation for Iowa was 36.98 inches for the water year 1983 compared to the normal of 31.91 inches.

The 1983 water year began with streamflow at all three of the index stations (fig. 3) in the excessive range. Streamflow continued excessive at these stations through July 1983. Record high monthly means were recorded for the Des Moines River at Ft. Dodge for October-March, and May, and record mean-daily discharges for the respective months were recorded for December-February. Record high monthly means also were recorded for the Cedar River at Cedar Rapids for December, February, and May, with a record mean-daily discharge for November. The water year ended with streamflow at two of the index stations, Des Moines River at Ft. Dodge and Nishnabotna River near Hamburg, in the normal range and Cedar River at Cedar Rapids again in the excessive range.

Climate for the 1983 water year was seasonally erratic. The winter was mild and wet. During the past 50 years, only the 1953-54 winter had been warmer. The winter was the third wettest of record exceeded only by 1914-15 and 1873-74. June 1983 was the wettest June since 1891 in northwest Iowa. The heat and less than normal precipitation during July and August, particularly in the southern one-half of Iowa, caused a serious drought. Even with excessive or normal streamflow and high ground water levels, the crops did not receive the necessary moisture during the peak of the growing season. The summer of 1983 was the hottest since 1936 and the driest in the southeast since 1936. The extreme heat ended in early September and rains restored soil moisture to normal by the end of autumn.

Water-quality data were collected bimonthly or quarterly at seven National Stream Quality Accounting Network (NASQAN) stations and one Hydrologic Benchmark (HBM) station in Iowa (fig. 4). These networks utilize a fixed-station and fixed-sampling interval concept. Data collected included measurements of pH, specific conductance, water temperature, dissolved oxygen, and fecal bacteria. Water samples were collected and analyzed for common constituents including cations, anions, and dissolved solids; nutrient constituents including nitrate, ammonia, phosphate and other nitrogen and phosphorus species; trace metals and suspended sediment. These samples were depth integrated and preserved at the sampling sites prior to analysis by the U.S. Geological Survey laboratory in Denver, Colorado.

Dissolved-solids data from selected NASQAN stations were used to demonstrate temporal variability of water quality for the Mississippi River, the Missouri River, and the Skunk River. Concentrations of dissolved solids were relatively normal at these three stations throughout the year (fig. 5) with the exception of the March and June samples collected at the Skunk River station in which the dissolved-solids concentration was considerably greater than the mean for the period of record. Nitrogen species, nitrate and nitrite, also were used to demonstrate temporal variability of water quality (fig. 6). Nitrogen concentrations for some months during 1983 at all three locations were greater than the mean for the period of record. Considerable increases in nitrogen concentration relative to past years occurred at the Omaha station and to a lesser extent at the Augusta station. Although not shown, other forms of nitrogen, namely ammonia and organic forms, also had relatively small increases in concentrations but not to the extent of nitrate.

Water levels in monitoring wells in water-table aquifers were above average for most of the State during the water year. A new high level was recorded in April in a well in Linn County and in October and December in an observation well in Webster County. Even during the drought, July-September, ground water levels either were above or slightly below monthly averages. The monthly average water levels for wells in figure 7 show the typical fluctuation of the water table throughout the year in the surficial aquifers. The normal monthly distribution of precipitation in Iowa for a water year is shown in figure 8. The water table fluctuates in response to the precipitation although the water-table rise is decreased in summer months because some of the water levels decline during the growing season because of large evapotranspiration losses when the crops are minor in the fall and winter when most plant life is dormant. Consequently, a greater percent of the precipitation that infiltrates into the soil reaches the water table. At the end of the water year, water levels were rising and were above average at 5 of the 7 reported wells. Levels at the two remaining wells were slightly below.

Table 1.--Runoff at streamflow stations representing all major river basins in Iowa.

Sta. No.	Station name	Drainage area (sq mi)	Runoff, (inches)		Previous maximum	
			1983	Average	Inches	Year
05387500	Upper Iowa R nr Decorah	511	22.4	8.3	19.1	1973
05412500	Turkey R at Garber	1,545	19.6	8.3	18.4	1973
05418500	Maquoketa R at Maquoketa	1,553	13.1	9.0	20.3	1973
05422000	Wapsipinicon R nr DeWitt	2,330	17.8	9.0	20.3	1973
05451500	Iowa R at Marshalltown	1,564*	19.8	7.0	18.5	1973
05455700	Iowa R nr Lone Tree	4,293*	16.9	9.0	19.0	1973
05464000	Cedar R at Waterloo	5,146*		7.6	16.9	1973
05465000	Cedar R nr Conesville	7,785*	18.0	8.1	17.8	1973
05465500	Iowa R at Wapello	12,499	17.1	7.5	18.6	1973
05474000	Skunk R at Augusta	4,303	14.3	7.6	20.6	1973
05480500	Des Moines R at Ft. Dodge	4,190*	18.0	4.5	11.6	1969
05484500	Raccoon R at Van Meter	3,441		5.1	(8.8)	(1973)
05485500	Des Moines R at SE14th	9,879*	18.1	5.9	19.2	1973
05490500	Des Moines R at Keosauqua	14,038	15.6	5.5	15.1	1973
06483500	Rock R at Rock Valley	1,592	14.0	3.0	16.2	1973
06600500	Floyd R at James	882	14.7	3.0	7.3	1979
06607500	Little Sioux R nr Turin	3,526	18.4	4.8	(3.3)	(1973)
06609500	Boyer R at Logan	871	13.9	4.9	10.0	1951
06810000	Nishnabotna R above Hamburg	2,806	11.1	5.1	(4.3)	(1973)
06811840	Tarkio R at Stanton	49.3	11.7	7.6	8.5	1969
06817000	Modaway R at Clarinda	762	11.9	6.0	(6.2)	(1973)
06817500	Platte R nr Diagonal	217	12.1	8.2	12.6	1951
06898000	Thompson R at Davis City	701	12.1	7.2	(11.6)	(1973)
06898400	Weldon R nr Leon	104	9.1	9.4	17.4	1973
06903400	Chariton R nr Chariton	182	12.5	8.4	19.5	1973
06903700	SP Chariton R nr Promise City	168	12.3	9.7	20.4	1973
Total drainage area included in study		52,080	15.9	6.4	16.6	(1973)
Areal weighted average						

* Not included in areal averaging of river basin runoff

Note.-- Average runoff for station based on period of record. Data for 1983 listed for all stations for comparative purpose even if not the previous maximum.

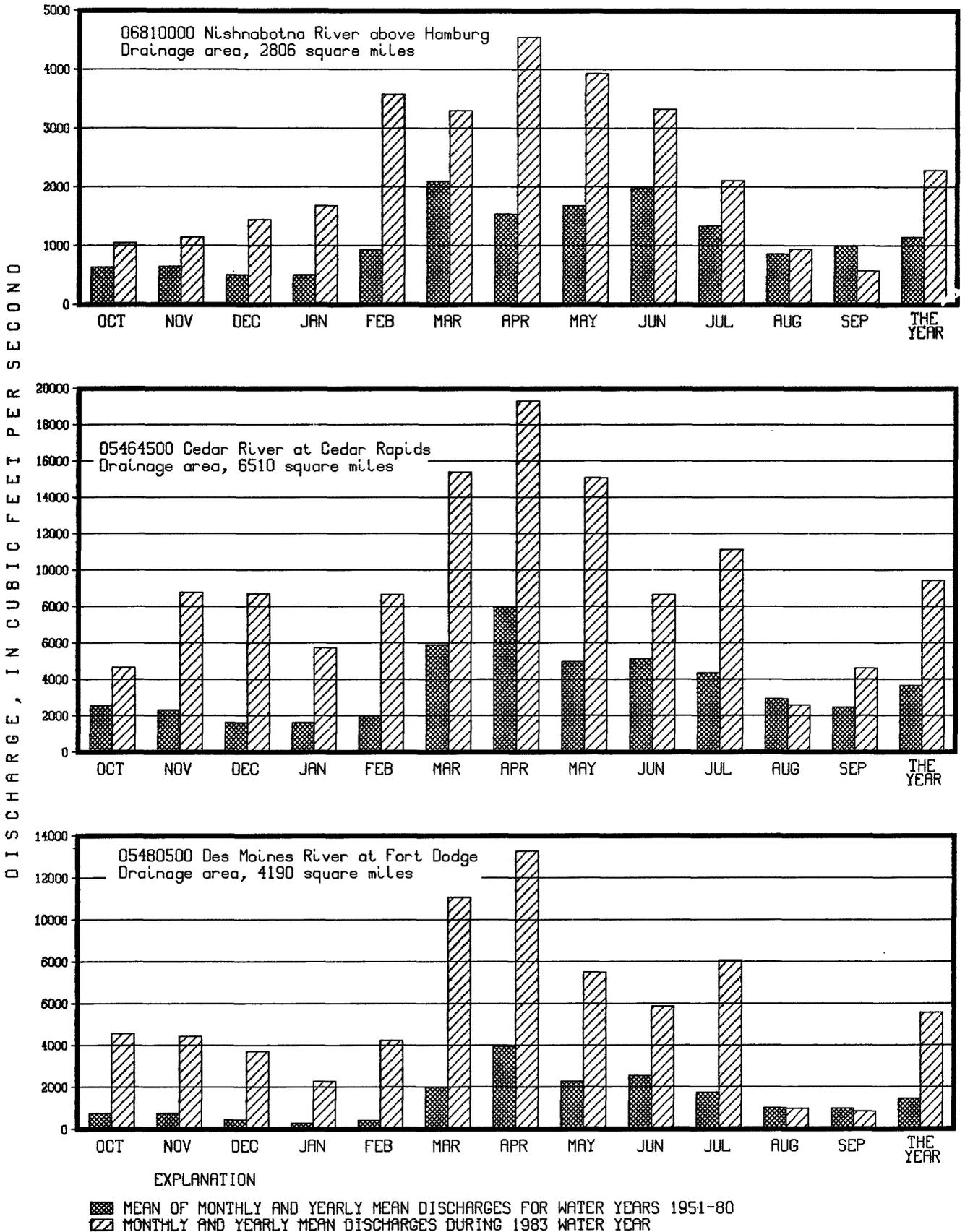


Figure 3.--Runoff during 1983 water year compared with mean runoff for 1951-80 water years at three representative gaging stations.

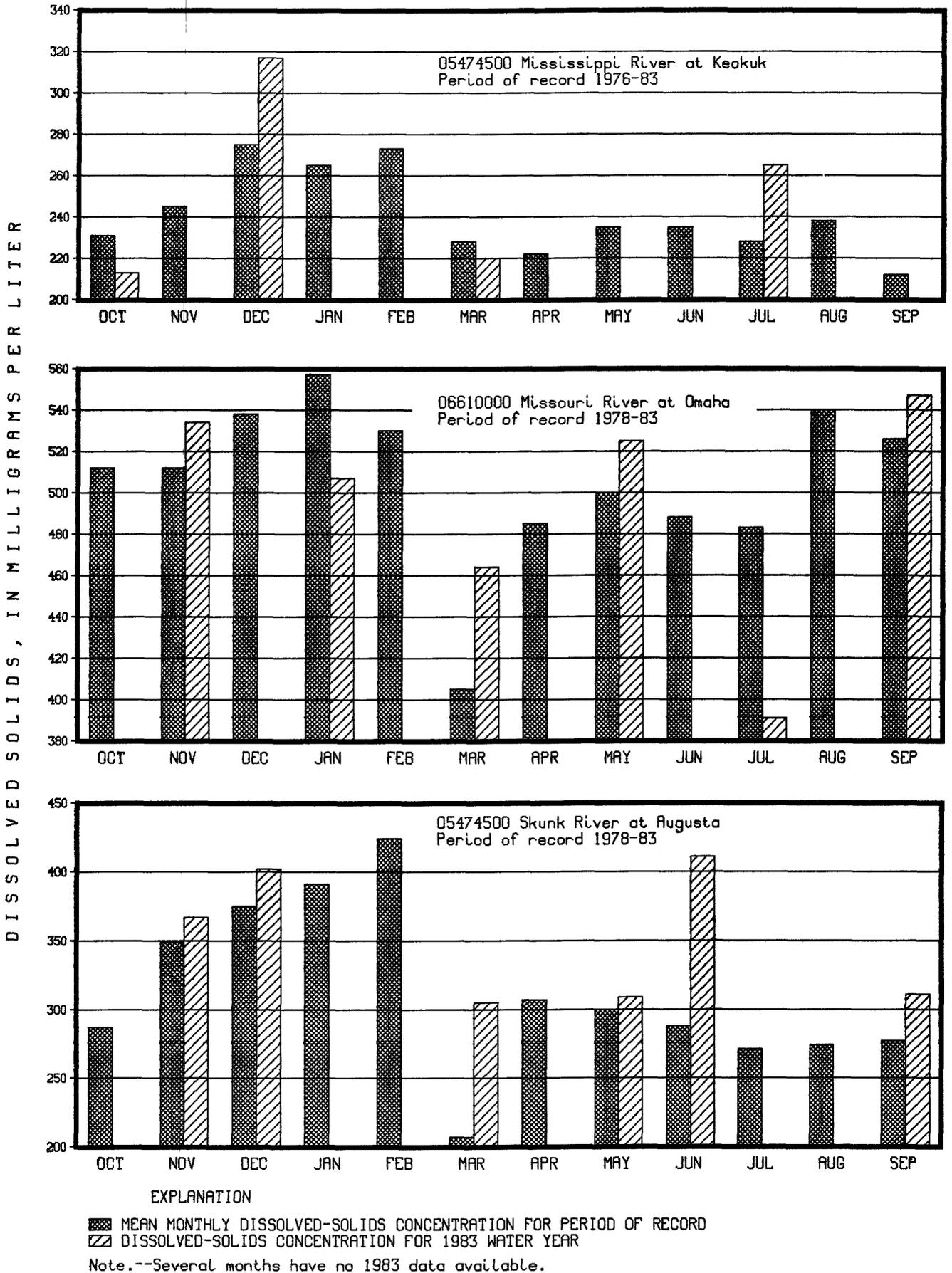
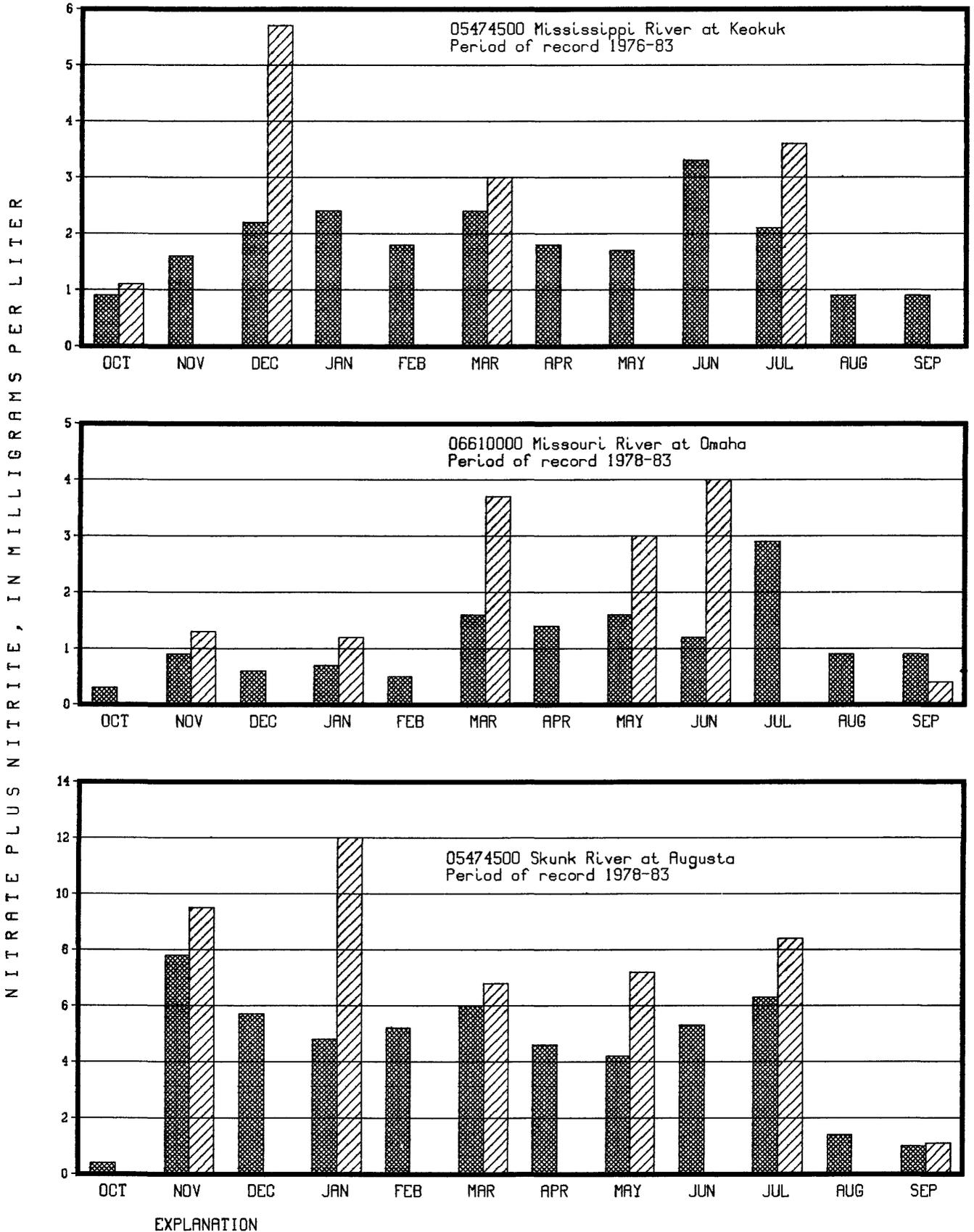


Figure 5.--Comparison of dissolved-solids concentrations for 1983 water year with mean monthly values for the period of record at three selected gaging stations.



EXPLANATION
 ■ MEAN MONTHLY NITRATE PLUS NITRITE CONCENTRATION FOR PERIOD OF RECORD
 ▨ NITRATE PLUS NITRITE CONCENTRATION FOR 1983 WATER YEAR

Note.--Several months have no 1983 data available.

Figure 6.--Comparison of nitrate plus nitrite concentrations for 1983 water year with mean monthly values for the period of record at three selected gaging stations.

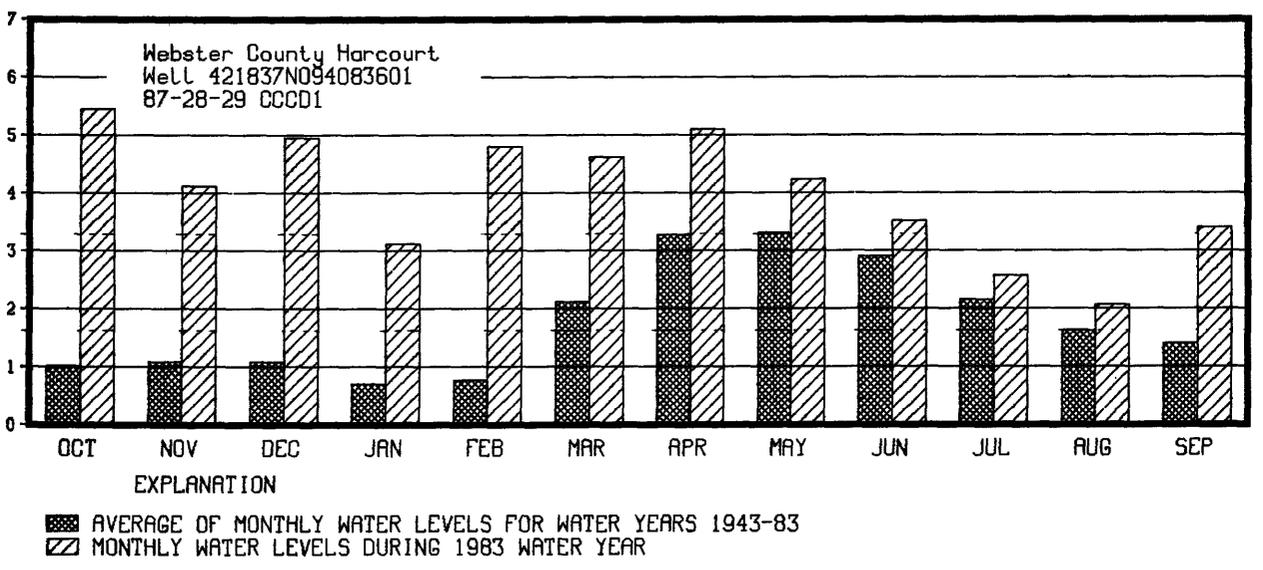
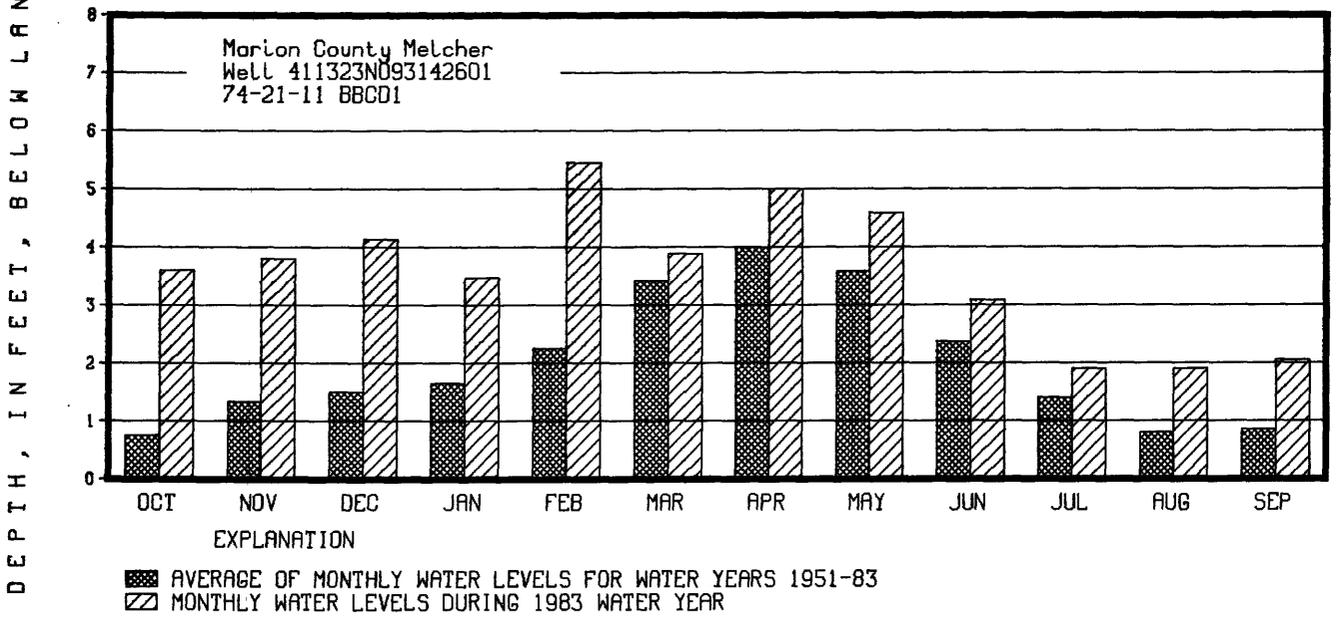
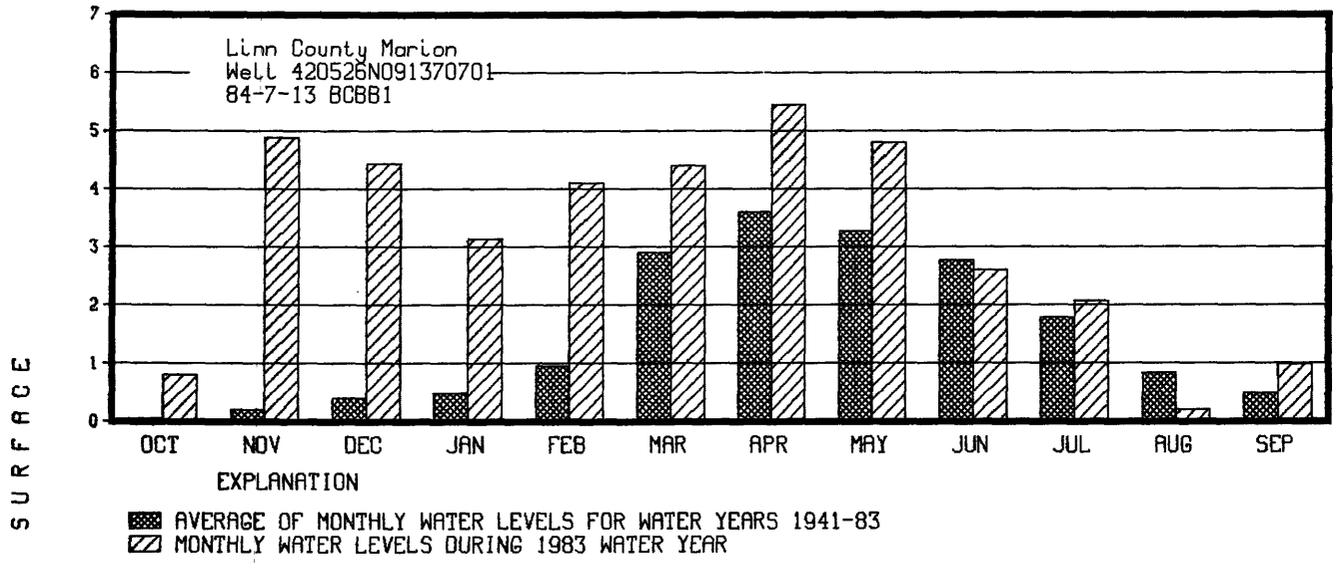


Figure 7.--Water level fluctuation during 1983 water year compared to average level for period as noted.

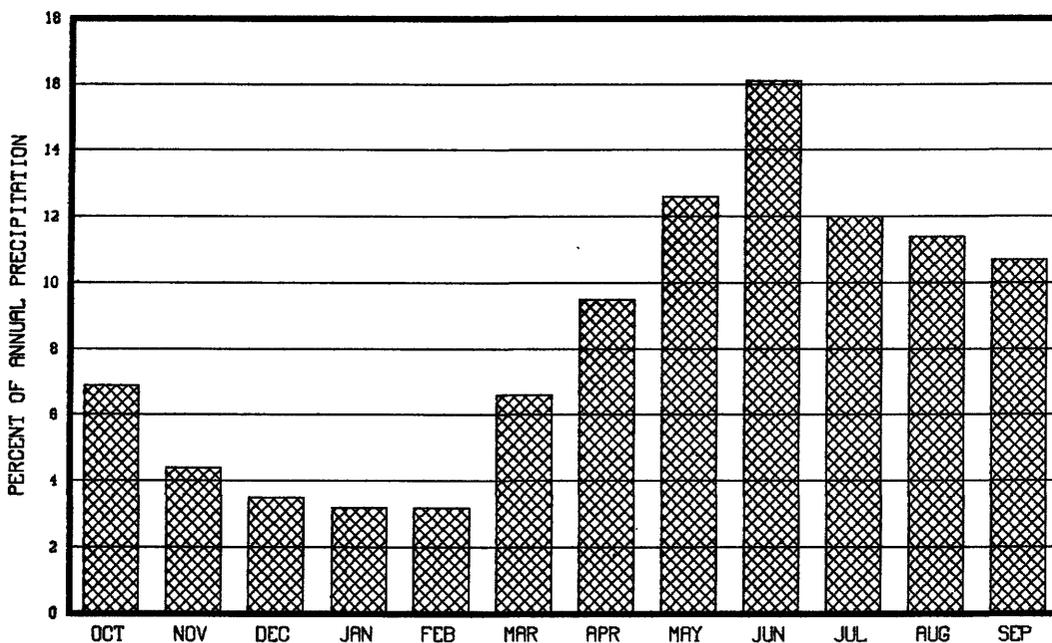


Figure 8.--Precipitation distribution, in percent of annual, by months for Iowa.
(Standard period, 1941-70)

DEFINITION OF TERMS

Terms related to streamflow, water-quality and other hydrologic data, as used in this report, are defined below. See also table for converting English Units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer, tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m³), and periphyton and benthic organisms in grams per square meter (g/m²).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-ft, about 646,000 gallons or 2,445 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT³/S, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, total fluid), plus suspended sediment that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO_3).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical element as mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter ($\mu\text{g/L}$, $\mu\text{g/l}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L , mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/l , and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (ml) or liters (l). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Sub-committee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [$\text{mg C}/(\text{m}^2 \cdot \text{time})$ for periphyton and macrophytes and $\text{mg C}/(\text{m}^3 \cdot \text{time})$] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2/(\text{m}^2 \cdot \text{time})$ for periphyton and macrophytes and $\text{mg O}_2/(\text{m}^3 \cdot \text{time})$] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that passes a section in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata* is the following:

Kingdom.....Animal
 Phylum.....Arthropoda
 Class.....Insecta
 Order.....Ephemeroptera
 Family.....Ephemeridae
 Genus.....Hexagenia
 Species.....Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indentation, each indentation representing one rank.

As an added means of identification and each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 05387500, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "387500."

Downstream order station numbers are not assigned to miscellaneous sites where only random water-quality samples or discharge measurements are taken.

NUMBERING SYSTEM FOR WELLS

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The former number serves not only to identify the well but also to locate it as a point on a map. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits represent degrees, minutes, and seconds of latitude; "N" refers to north latitude and is used to break the string of numbers; the next seven digits are degrees, minutes, and seconds of west longitude; and the number after the decimal point is a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

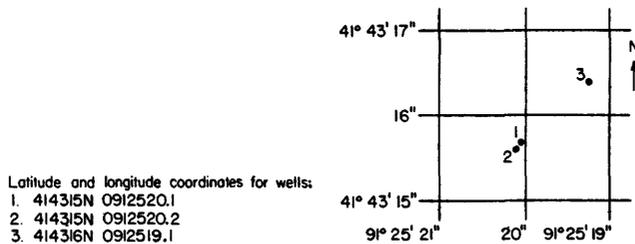


Figure 9. Latitude-longitude well number.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is situated. The letters after the section number which are assigned in a counter-clockwise direction (beginning with "a" in the northeast quarter), represent subdivisions of the section. The first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3cddb1 designates the well in the SE1/4 NW1/4 SE1/4 SW1/4 sec.3, T.96 N., R.20 W.

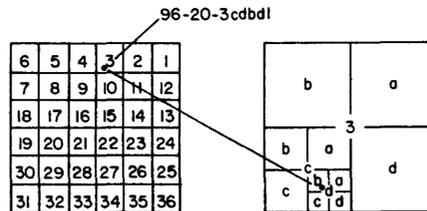


Figure 10. Local well numbering system for well 96-20-3cddb1.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the table gives the contents, from which the daily, monthly, or yearly change in contents is computed. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise, daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging stations gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum (NGVD) is explained in "DEFINITION OF TERMS" on page 12.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage or contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is published for most reservoirs.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented as a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of data

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables, is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Records of discharge collected by agencies other than the Geological Survey

Records of discharge not published by the Geological Survey were collected during water year 1983 at several sites in Iowa by the Corps of Engineers, U.S. Army. The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of such sites. Information on records available at specific sites can be obtained upon request.

EXPLANATION OF WATER QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on the next page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Although these temperatures are measured on different days of the month, an analysis of these data for each month for a long period of record will indicate significant thermal characteristics of the stream. Data have been analyzed for the period of record through 1974 for gaging stations with 10 or more years of record. A summary on monthly maximum, minimum and mean temperatures were published in the 1974 water data report. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharge.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples are collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Ground-water level data from a network of observation wells are published in this report. These water-level measurements provide a long-term record of water-level changes in the State's most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude (figure 9), and (2) a local number based on township, range, and section (figure 10). Measurements are made in many types of wells under varying conditions of access. At each observation well the equipment and techniques used are listed and are those that will insure that measurements at each well are consistent and accurate.

Water-level measurements in this report are given in feet with reference to land-surface datum. National Geodetic Vertical Datum, 1929 is the datum plane on which the national network of levels is based. Land-surface datum is a datum plane that is approximately at land surface at each well. The altitude of the land-surface datum above National Geodetic Vertical Datum, 1929 is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water-level measurements are reported to the nearest hundredth of a foot. Estimates, indicated by e may be reported in tenths of a foot. The error of water-level measurements may be at most a few hundredths of a foot.

ACCESS TO WATSTORE DATA

The National WATER Data STORAGE and RETRIEVAL System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's district offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-eight manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett Street, Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number and "U.S. Geological Survey Techniques of Water-Resources Investigations".

- 1-D1. Water temperature--influential factors, field measurements, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. Application of surface geophysics to ground-water resources investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. State measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 29 pages.
- 3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. Measurement of time of travel and dispersion in streams by dye tracing, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.
- 3-A11. Measurements of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A14. Use of flumes in measuring discharge, by F.A. Kilpatrick and V.R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. Introduction to ground-water hydraulics, a programed text for self-instruction, by G. D. Bennet: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. Type curves for selected problems of flow to wells in confined aquifers, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. Computation of rate and volume of stream depletion by wells, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. Methods for determination of inorganic substances in water and fluvial sediments, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. Methods for analysis of organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P. E. Greeson, T. A. Ehke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.
- 5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 7-C1. Finite difference model for aquifer simulation in two dimensions with results of numerical experiments, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. Computer model of two-dimensional solute transport and dispersion in ground water, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. A model for simulation of flow in singular and interconnected channels, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-B2. Calibration and maintenance of vertical-axis type current meters, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

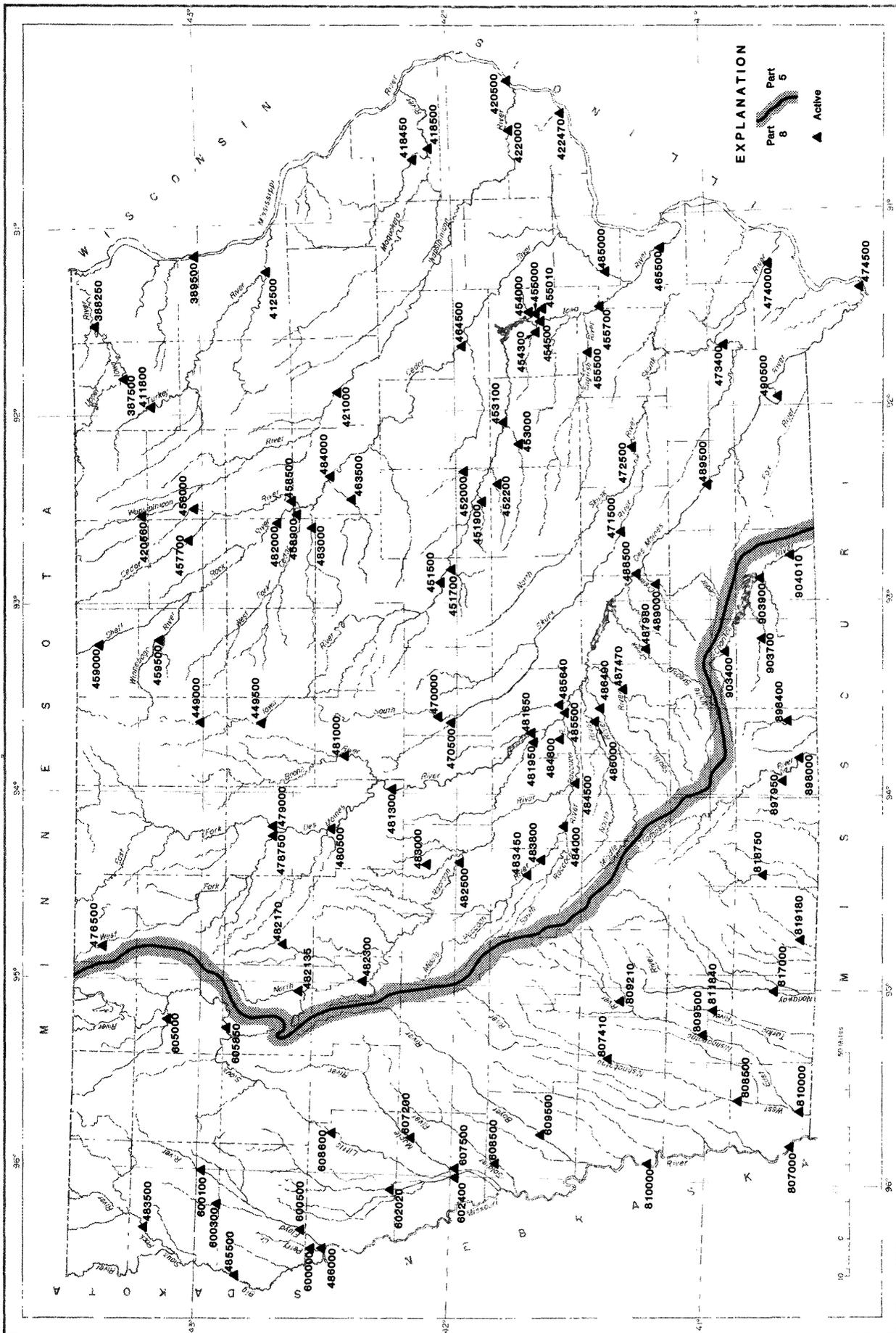


Figure 11.-Location of continuous-record gaging stations in Iowa.

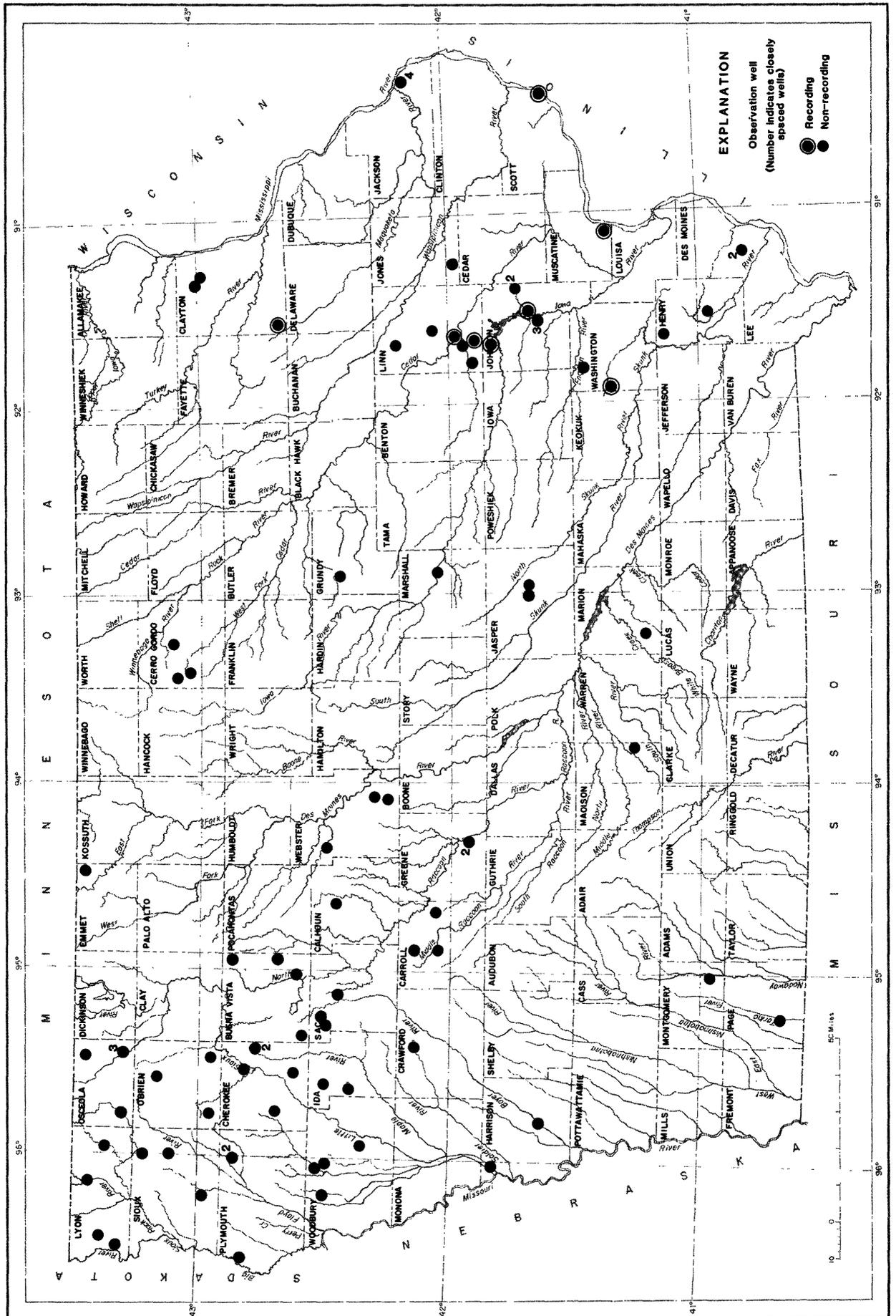


Figure 12.-Location of observation wells in Iowa.

Table 2.--Chronology of daily gaging stations in Iowa.

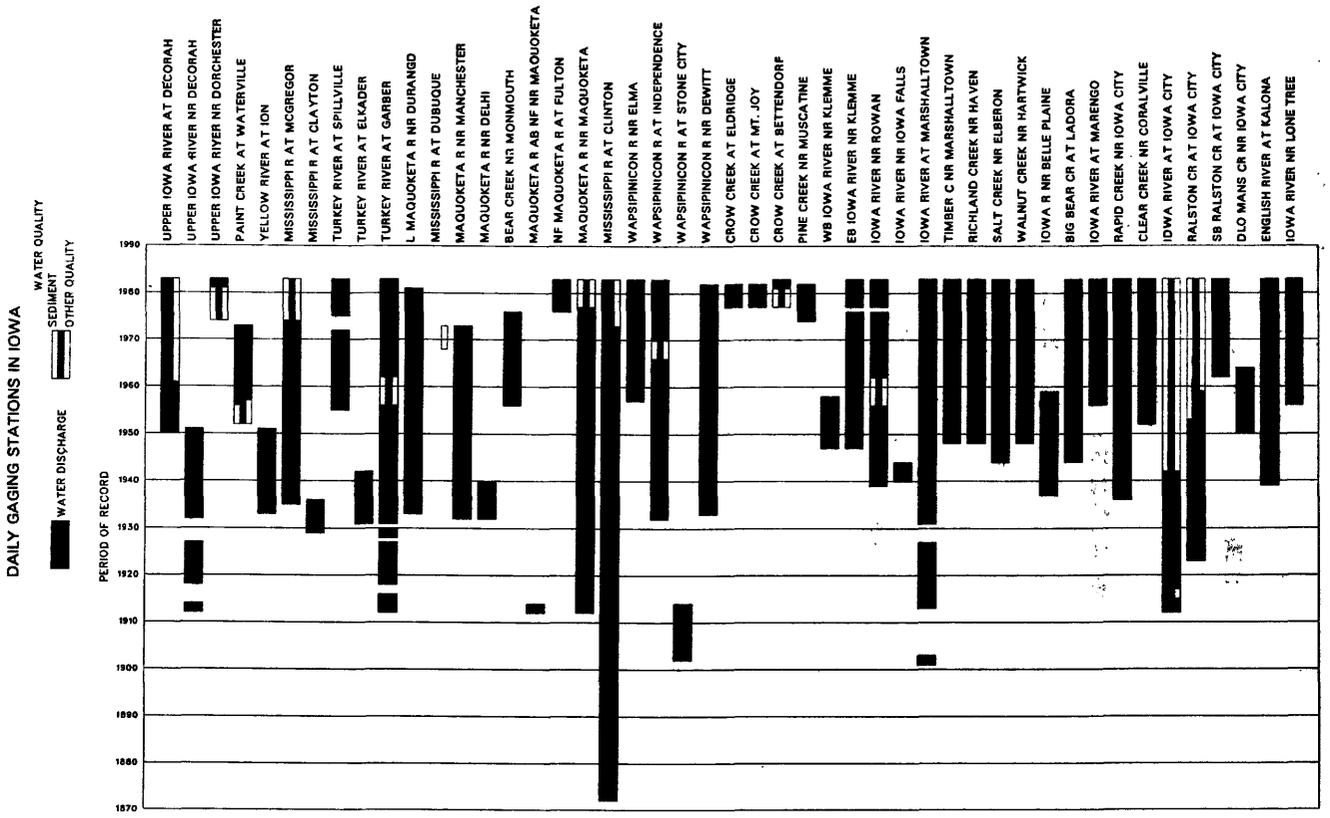
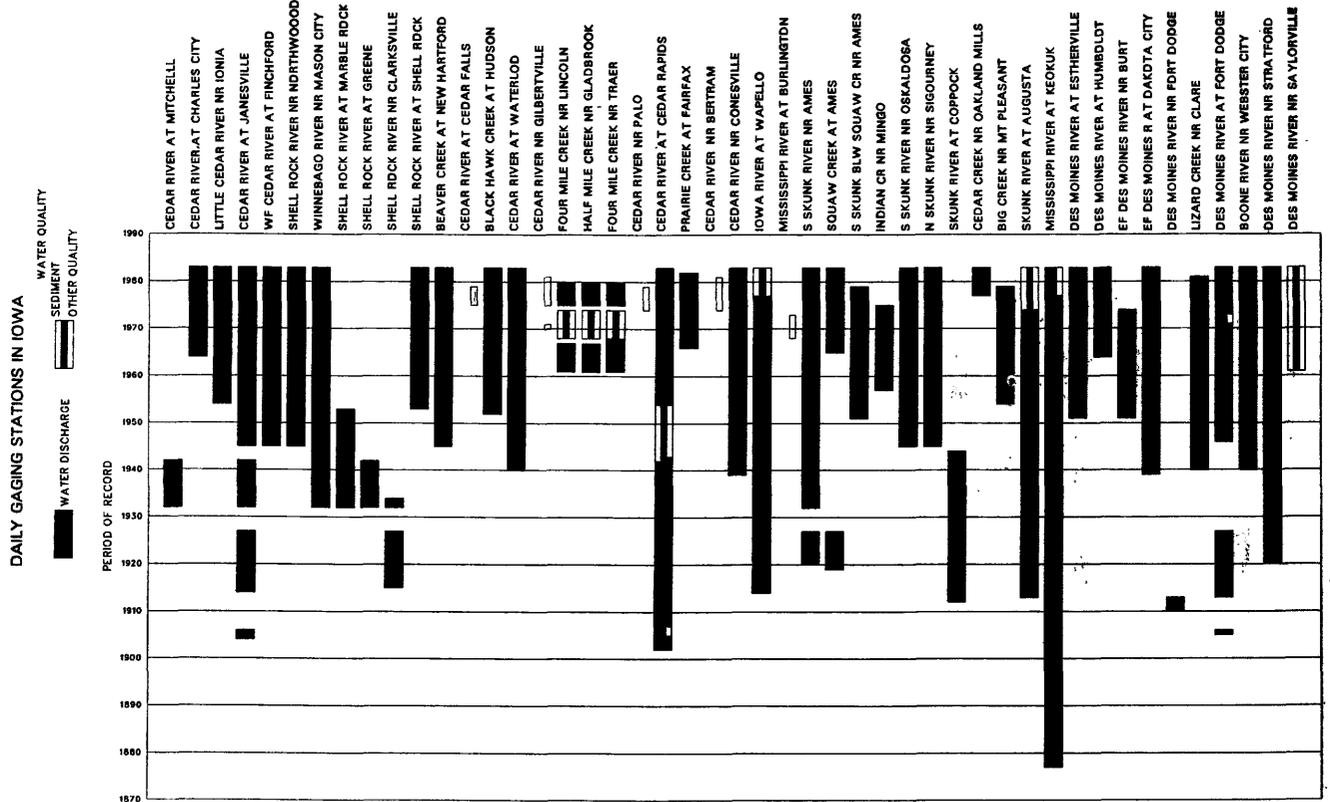
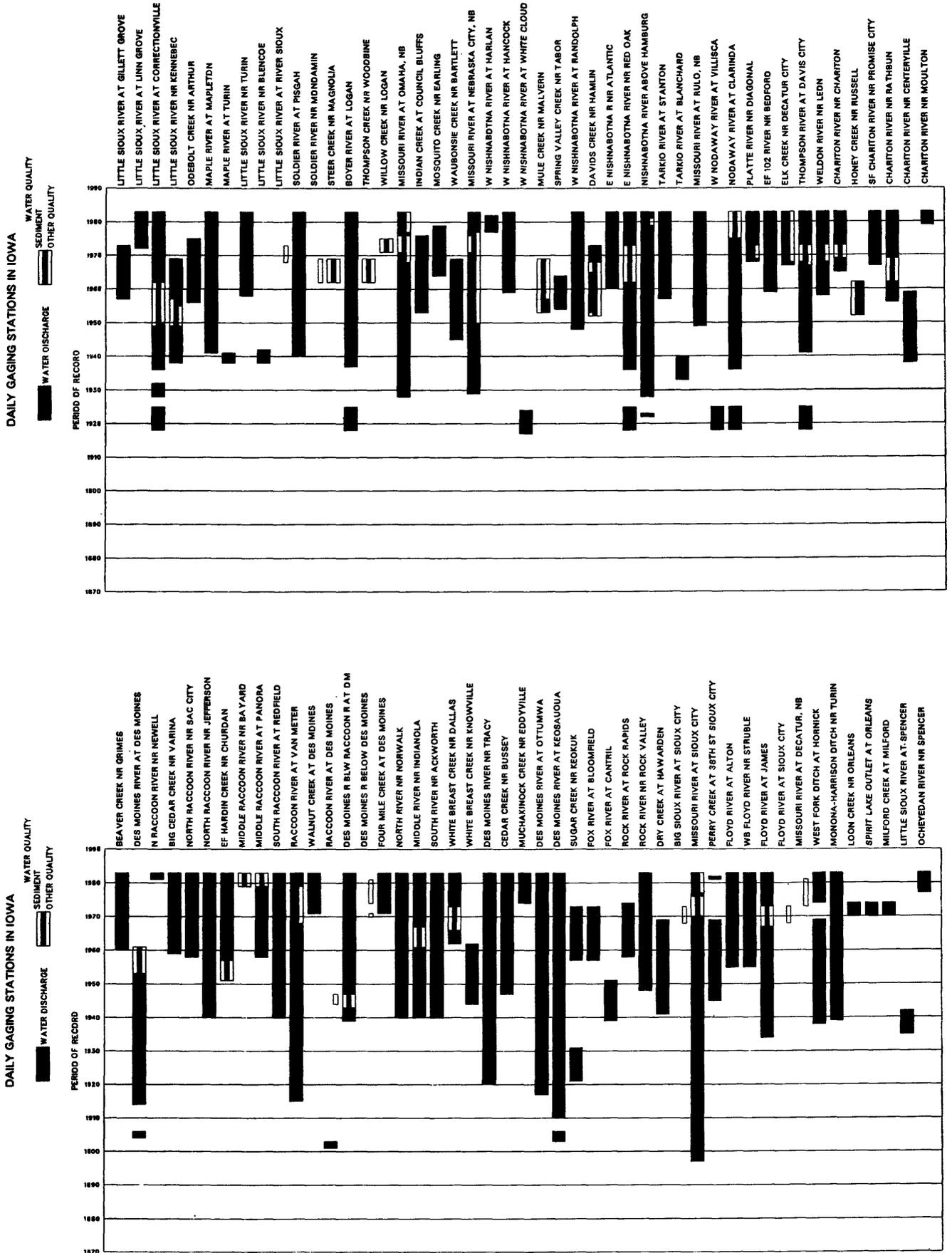


Table 2.--Chronology of daily gaging stations in Iowa--Continued.



WATER RESOURCES DATA FOR IOWA, 1983

DISCONTINUED GAGING STATIONS

The following stream-gaging stations have been discontinued in Iowa. Continuous daily streamflow records were collected and published for the period of record shown for each station.

Discontinued gaging stations

Station name	Station number	Drainage area (sq mi)	Period of record
Upper Iowa River near Decorah, Iowa.	05388000	568	1913-14; 1919-27;
Paint Creek at Waterville, Iowa.	05388500	42.8	1952-73.
Yellow River at Ion, Iowa.	05389000	221	1934-51.
Mississippi River at Clayton, Iowa.	05411500	9,200	1930-36.
Turkey River at Elkader, Iowa.	05412000	891	1932-42.
Little Maquoketa River near Durango, Iowa.	05414500	130	1934-82.
Maquoketa River near Manchester, Iowa.	05417000	305	1933-73.
Maquoketa River near Delhi, Iowa.	05417500	347	1933-40.
Bear Creek near Monmouth, Iowa.	05417700	61.3	1957-76.
Maquoketa River above North Fork Maquoketa River near Maquoketa, Iowa.	05418000	938	1913-14.
Wapsipinicon River at Stone City, Iowa.	05421500	1,324	1903-14.
Crow Creek at Eldrige, Iowa.	05422420	2.20	1977-82.
Crow Creek at Mt. Joy, Iowa.	05422450	6.90	1977-82.
Pine Creek at Muscatine, Iowa.	05448150	38.9	1975-82.
Eagle Lake inlet near Britt, Iowa.	05448285	3.83	1975-80.
Eagle Lake outlet near Britt, Iowa.	05448290	11.3	1975-80.
West Branch (West Fork) Iowa River near Klemme, Iowa.	05448500	112	1948-58.
Iowa River near Iowa Falls, Iowa.	05450000	665	1911-14.
Upper Pine Lake at Eldora, Iowa.	05450500	14.9	1936-70.
Lower Pine Lake at Eldora, Iowa.	05451000	15.9	1936-70.
Iowa River near Belle Plaine, Iowa.	05452500	2,455	1939-59.
Lake Macbride near Solon, Iowa.	05453500	27.0	1936-71.
Old Mans Creek near Iowa City, Iowa.	05455100	201	1950-64.
Cedar River at Mitchell, Iowa.	05457500	826	1933-42.
Shell Rock River at Marble Rock (Greene), Iowa.	05460500	1,318	1933-53.
Shell Rock River at Greene, Iowa.	05461000	1,357	1933-42.
Shell Rock River near Clarksville, Iowa.	05461500	1,626	1915-27; 1932-34.
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	1962-67; 1969-74;
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	1962-67; 1969-74;
Fourmile Creek near Traer, Iowa.	05464137	19.51	1962-74; 1975-80.
Prairie Creek at Fairfax, Iowa.	05464640	178	1966-82.
South Skunk River below Squaw Creek near Ames, Iowa.	05471000	556	1952-79.
Indian Creek near Mingo, Iowa.	05471200	276	1958-75.
Lake Keomah near Okaloosa, Iowa.	05472000	3.06	1936-71.
Skunk River at Coppock, Iowa.	05473000	2,916	1913-44.
Big Creek near Mount Pleasant, Iowa.	05473500	106	1955-79.
East Fork Des Moines River near Burt, Iowa.	05478000	462	1971-74.
East Fork Des Moines River near Hardy, Iowa.	05478500	1,268	1940-54.
Des Moines River near Fort Dodge, Iowa.	05479500	3,753	1911-13.
Lizard Creek near Clare, Iowa.	05480000	257	1940-82.
Des Moines River near Boone, Iowa.	05481500	5,511	1920-68.
Des Moines River at Des Moines, Iowa.	05482000	6,245	1905-00; 1915-61.
Storm Lake at Storm Lake, Iowa.	05482140	28.3	1970-75.
Springbrook Lake near Guthrie Center, Iowa.	05483500	5.18	1936-71.
Raccoon River at Des Moines, Iowa.	05485000	3,590	1902-03.
Lake Ahquabi near Indianola, Iowa.	05487000	4.93	1936-71.
White Breast Creek near Knoxville, Iowa.	05488000	380	1945-62.
Lake Wapello near Drakesville, Iowa.	05490000	7.75	1936-71.
Sugar Creek near Keokuk, Iowa.	05491000	105	1922-31; 1958-73.
Muchakinock Creek near Eddyville, Iowa.	05489190	70.2	1975-79.
Fox River at Bloomfield, Iowa.	05494300	87.7	1957-73.
Fox River at Cantril, Iowa.	05494500	161	1940-51.
Rock River at Rock Rapids, Iowa.	05483270	788	1959-74.
Dry Creek at Hawarden, Iowa.	05484000	48.4	1948-69.
West Fork ditch at Holly Springs, Iowa.	05602000	399	1939-69.
Loon Creek near Orleans, Iowa.	05603920	31	1971-74.
Spirit Lake outlet at Orleans, Iowa.	05604100	75.6	1971-74.
Milford Creek at Milford, Iowa.	05604400	146	1971-74.
Little Sioux River at Spencer, Iowa.	05605100	990	1936-42.
Little Sioux River at Gillett Grove, Iowa.	05605600	1,334	1958-73.
Little Sioux River near Kennebeck, Iowa.	05606700	2,738	1939-69.
Odebolt Creek near Arthur, Iowa.	05607000	39.3	1957-75.
Maple River at Turin, Iowa.	05607300	725	1939-41.
Little Sioux River near Blencoe (Turin), Iowa.	05607510	4,470	1939-42.
Steer Creek near Magnolia, Iowa.	05609200	9.26	1963-69.
Thompson Creek near Woodbine, Iowa.	05609590	6.97	1963-69.
Willow Creek near Logan, Iowa.	05609600	129	1972-75.
Indian Creek at Council Bluffs, Iowa.	05610500	7.99	1954-76.
Mosquito Creek near Earling, Iowa.	05610520	33.0 (revised)	1965-79.
Waubonsie Creek near Bartlett, Iowa.	05806000	30.4	1946-69.
West Nishnabotna River at Harlan, Iowa	05807320	316	1977-82.
West Nishnabotna River at (near) White Cloud, Iowa.	05807500	967	1918-24.
Mule Creek near Malvern, Iowa.	05808000	10.6	1954-69.
Spring Valley Creek near Tabor, Iowa.	05808200	7.6	1955-64.
Dauids Creek near Hamlin, Iowa.	05809000	26.0	1952-73.
Milford Creek at Milford, Iowa.	05604400	146	1971-74.3
West Nodaway River at Villisca, Iowa	05816500	342	1918-25.
Honey Creek near Russell, Iowa.	05903500	13.2	1952-62.
Chariton River near Centerville, Iowa.	05904000	708	1938-59.

DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature or sediment and monthly or periodic samples of chemical quality were collected and published for the period of record shown for each station. An asterisk (*) in the type of record column indicates that periodic data is available for that parameter subsequent to the period of daily record.

Discontinued water-quality stations				
Station name	Station number	Drainage area (sq mi)	Type of Record	Period of record
Paint Creek at Waterville, Iowa.	05388500	42.8	Temp. Sed.	1952-56 1952-57
Turkey River at Garber, Iowa.	05412500	1,545	Temp., Sed.*	1957-62
Mississippi River at Dubuque, Iowa.	05414700	1,600	Chem.	1969-73
Maquoketa River near Maquoketa, Iowa.	05418500	1,553	Chem., Temp., Sed.	1978-82
Wapsipinicon River at Independence, Iowa.	05421000	1,048	Chem.*	1968-70
			Temp., Sed.*	1967-70
Crow Creek at Bettendorf, Iowa.	05422470	17.8	Chem., Temp., Sed.	1978-82
Iowa River near Rowan, Iowa.	05449500	429	Temp., Sed.*	1957-62
Cedar River at Cedar Falls, Iowa.	05463050	4,734	Chem.	1975-79
Cedar River near Gilbertville, Iowa.	05464020	5,234	Chem.	1971; 1975-81
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	Chem., Temp., Sed.	1969-74
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	Chem., Temp., Sed.	1969-74
Fourmile Creek near Traer, Iowa.	05464137	19.51	Chem., Temp., Sed.	1969-74
Cedar River near Palo, Iowa.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Iowa.	05464500	6,640	Chem.*	1906-07; 1944-54
			Temp.*	1944-54
			Sed.	1943-54
Cedar River near Bertram, Iowa.	05464760	6,955	Chem.	1975-81
Mississippi River at Burlington, Iowa.	05469720	4,000	Chem.	1969-73
Des Moines River at Fort Dodge, Iowa.	05480500	4,190	Chem.	1972-73
Des Moines River at Des Moines, Iowa.	05482000	6,245	Chem.	1954-55
			Temp., Sed.	1954-61
E. Fork Hardin Creek near Churdan, Iowa.	05483000	24.0	Temp., Sed.*	1952-57
Raccoon River at Van Meter, Iowa.	05484500	3,441	Chem.	1969-73; 1974-79
Raccoon River at Des Moines, Iowa.	05485000	3,590	Chem., Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Iowa.	05485500	9,770	Chem.*	1944-45
			Temp., Sed.	1944-47
Des Moines River below Des Moines, Iowa.	05485520	9,901	Chem.	1971; 1975-81
Middle River near Indianola, Iowa.	05486490	503	Temp., Sed.	1962-67
White Breast Creek near Dallas, Iowa.	05487980	342	Chem.	1968-73
			Temp., Sed.	1967-73
Big Sioux River at Sioux City, Iowa.	06485950	9,410	Chem.	1969-73
Floyd River at James, Iowa.	06600500	882	Temp., Sed.	1968-73
Floyd River at Sioux City, Iowa.	06600520	921	Chem.	1969-73
Missouri River at Decatur, Nebr.	06601200	316,160	Chem.	1974-81
Little Sioux River at Correctionville, Iowa.	06606600	2,500	Chem.*	1954-55
			Temp.*	1951-62
			Sed.	1950-62
Little Sioux River near Kennebec, Iowa.	06606700	2,738	Temp.	1950-55
			Sed.	1950-57
Little Sioux River at River Sioux, Iowa.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Iowa.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Iowa.	06609200	9.26	Temp., Sed.	1963-69
Thompson Creek near Woodbine, Iowa.	06609590	6.97	Temp., Sed.	1963-69
Willow Creek near Logan, Iowa.	06609600	129	Chem., Temp.	1972-75
			Sed.	1971-75
Missouri River at Nebraska City, Nebraska.	06807000	410,000	Chem., Temp.	1951-77
			Sed.	1971-76
Mule Creek near Malvern, Iowa.	06808000	10.6	Temp.	1958-69
			Sed.	1954-69
Davids Creek near Hamlin, Iowa.	06809000	26.0	Temp.*	1952-53; 1965-68
East Nishnabotna River at Red Oak, Iowa.	06809500	894	Temp., Sed.	1962-73
Platte River near Diagonal, Iowa.	06818750	217	Chem.	1969-73
Thompson River at Davis City, Iowa.	06898000	701	Chem.	1967-73
			Temp., Sed.	1960-73
Weldon River near Leon, Iowa.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Iowa.	06903400	182	Temp., Sed.	1969-73
Honey Creek near Russell, Iowa.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Iowa.	06903900	551	Temp., Sed.*	1962-69

Type of record: Chem. (chemical quality); Temp. (water temperature); Sed. (sediment).

UPPER IOWA RIVER BASIN

05387500 UPPER IOWA RIVER AT DECORAH, IA

LOCATION.--Lat 43°18'19", long 91°47'48", in NE1/4 SW1/4 sec.16, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on right bank 1,200 ft upstream from bridge on U.S. Highway 52 (city route) in Decorah, 1,500 ft downstream from Dry Run cutoff, and 3.0 mi upstream from Trout Run.

DRAINAGE AREA.--511 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1951 to Sept. 30, 1983 (discontinued).

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft NGVD.

REMARKS.--Records good except those for winter period, which are fair.

AVERAGE DISCHARGE.--32 years, 327 ft³/s, 8.69 in/yr, 236,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s Mar. 27, 1961, gage height, 13.08 ft; minimum daily, 22 ft³/s Feb. 2-7, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood known, probably since at least 1913, occurred May 29, 1941, at site of former gaging station near Decorah, 4 mi downstream, discharge, 28,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 13	0900	4,740	8.49	July 3	0415	4,630	8.42
Mar. 7	2400	4,540	8.36	Sept. 21	2145	*5,730	*9.11

Minimum daily discharge, 120 ft³/s, Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1160	721	573	1160	270	1440	999	558	742	3430	331	309
2	1400	641	583	974	200	1840	1380	617	690	3490	324	297
3	1130	598	626	843	145	2120	1400	620	654	3350	320	281
4	1070	552	636	779	135	2750	1380	583	614	2000	330	268
5	741	516	914	708	130	3020	1180	543	579	1880	307	269
6	609	486	1550	670	125	3220	1080	560	548	1410	299	266
7	554	457	1590	611	120	3900	1100	946	516	1110	292	255
8	526	432	1250	554	125	3340	1120	1460	495	958	283	247
9	511	436	965	530	140	1810	1020	1100	474	852	275	239
10	469	842	860	528	200	1370	1020	895	459	771	269	234
11	438	2710	780	500	230	1130	1090	800	447	705	261	231
12	411	4140	680	440	260	990	1270	870	463	645	255	227
13	388	4310	700	425	270	902	1420	1300	457	602	250	220
14	369	2250	670	450	279	846	2090	1630	428	568	246	216
15	350	1620	620	380	275	838	3320	1290	412	541	242	225
16	336	1390	573	365	294	1040	2430	1080	418	517	238	259
17	321	1210	530	370	296	1380	2060	949	392	499	236	272
18	305	1070	523	340	308	1910	1650	902	395	551	231	274
19	305	1000	501	355	417	2010	1420	1520	387	495	228	298
20	600	976	475	370	912	1520	1250	1980	387	467	221	2410
21	2000	959	450	360	1490	1240	1120	1620	388	435	236	5060
22	1710	888	444	344	1600	1040	1020	2150	375	412	231	2460
23	1130	796	449	340	1430	902	925	1940	359	402	225	1190
24	889	706	561	324	1140	816	841	1470	370	394	218	922
25	765	646	810	305	902	746	781	1280	346	381	633	791
26	683	610	901	270	697	704	732	1080	357	371	538	704
27	624	553	887	220	625	677	683	1020	620	362	509	639
28	592	592	3110	260	902	638	638	976	923	356	435	597
29	655	636	2840	330	---	619	607	927	1360	390	375	562
30	1120	600	1710	310	---	613	577	874	1970	364	346	526
31	903	---	1380	260	---	657	---	813	---	343	322	---
TOTAL	23064	33343	29141	14675	13917	46028	37603	34353	17025	29051	9506	20748
MEAN	744	1111	940	473	497	1485	1253	1108	568	937	307	692
MAX	2000	4310	3110	1160	1600	3900	3320	2150	1970	3490	633	5060
MIN	305	432	444	220	120	613	577	543	346	343	218	216
CFSM	1.46	2.17	1.84	.93	.97	2.91	2.45	2.17	1.11	1.83	.60	1.35
IN.	1.68	2.43	2.12	1.07	1.01	3.35	2.74	2.50	1.24	2.11	.69	1.51
AC-FT	45750	66140	57800	29110	27600	91300	74590	68140	33770	57620	18860	41150

CAL YR 1982	TOTAL	227779	MEAN	624	MAX	4310	MIN	100	CFSM	1.22	IN	16.58	AC-FT	451800
WTR YR 1983	TOTAL	308454	MEAN	845	MAX	5060	MIN	120	CFSM	1.65	IN	22.45	AC-FT	611800

UPPER IOWA RIVER BASIN

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 33.5°C July 5-6, 1977; minimum, 0.0°C on many days during winter periods.

SUSPENDED-SEDIMENT DISCHARGE: October 1962 to December 1967.

INSTRUMENTATION.--Temperature recorder since Apr. 12, 1967.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 33.5°C July 5-6, 1977; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,700 mg/L May 26, 1965; minimum daily mean, 1 mg/L Oct. 21, 1965.

SEDIMENT LOADS: Maximum daily, 62,300 tons June 10, 1967; minimum daily, 0.1 ton Oct. 21, 1965.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 28.5°C Aug. 19; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1962 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	18.0	16.5	11.0	10.5	8.0	6.0	---	---	.0	.0	4.0	3.5
2	17.0	15.5	11.0	10.5	10.0	8.0	---	---	.0	.0	4.0	3.0
3	15.5	14.5	11.0	8.0	10.0	8.0	---	---	.0	.0	4.5	3.5
4	15.0	13.5	8.0	5.5	8.0	6.5	---	---	.0	.0	4.5	3.5
5	16.0	14.5	5.5	5.0	6.8	4.8	---	---	.0	.0	5.5	4.5
6	16.0	15.0	5.5	4.5	4.5	4.0	---	---	.0	.0	7.0	5.5
7	15.5	13.5	7.0	5.5	4.0	3.5	---	---	.0	.0	7.0	6.0
8	15.0	13.0	7.0	6.0	3.0	3.0	---	---	.0	.0	5.5	3.5
9	15.0	14.5	6.5	6.5	---	---	---	---	.0	.0	4.0	3.0
10	14.0	13.5	8.0	6.5	---	---	---	---	.0	.0	3.5	3.0
11	14.0	13.0	7.0	6.0	---	---	1.0	.0	.0	.0	4.0	3.5
12	13.0	11.5	6.5	5.0	1.5	1.5	.0	.0	.0	.0	4.0	4.0
13	12.0	11.5	5.0	3.5	---	---	.0	.0	.5	.0	5.5	4.0
14	14.0	11.5	4.0	3.5	---	---	.8	.0	.5	.0	6.5	5.0
15	14.0	12.0	4.0	3.5	---	---	.0	.0	3.0	.0	5.0	4.5
16	13.0	11.0	8.0	4.0	---	---	.0	.0	3.5	3.0	4.5	4.0
17	13.0	11.5	5.0	4.0	---	---	.0	.0	4.5	3.0	5.0	4.0
18	13.0	11.5	6.0	4.5	---	---	.0	.0	3.5	3.0	5.0	4.5
19	12.0	11.5	8.5	6.0	---	---	.0	.0	5.0	3.0	4.5	4.0
20	12.0	8.0	10.0	8.5	---	---	.0	.0	3.5	2.0	4.0	3.5
21	8.0	6.5	9.5	7.0	---	---	.0	.0	3.0	1.5	4.5	3.0
22	7.0	5.5	7.0	6.0	---	---	.0	.0	2.0	1.5	4.5	3.0
23	8.5	6.5	6.5	4.0	---	---	1.5	.0	3.0	2.0	5.0	3.0
24	9.0	8.0	4.0	3.0	5.0	5.0	2.0	.0	3.5	3.0	5.5	3.5
25	10.0	8.5	3.5	3.0	---	---	1.0	.0	3.0	1.5	6.0	4.5
26	10.0	8.5	4.0	3.5	3.5	3.5	.0	.0	2.0	1.5	5.5	4.0
27	9.5	9.0	3.5	3.0	---	---	.0	.0	3.5	2.0	4.0	3.5
28	10.5	9.5	4.0	3.0	---	---	.0	.0	4.5	3.0	7.0	4.5
29	11.0	10.0	5.0	4.0	1.5	1.5	.0	.0	---	---	6.5	5.0
30	11.0	10.0	6.0	5.0	---	---	.0	.0	---	---	6.5	5.5
31	10.5	10.0	---	---	---	---	.0	.0	---	---	5.5	5.5
MONTH	18.0	5.5	11.0	3.0	10.0	1.5	2.0	.0	5.0	.0	7.0	3.0

UPPER IOWA RIVER BASIN

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'16", long 91°30'31", in SW1/4 NW1/4 sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft upstream from Mineral Creek, 0.5 mi upstream from Bear Creek, 3.5 mi south of Dorchester, and 18.1 mi upstream from mouth.

DRAINAGE AREA.--770 mi².

PERIOD OF RECORD.--September 1936 to June 1975 (gage heights and discharge measurements only), July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft NGVD. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi upstream at datum 5.91 ft higher. Jan. 6, 1938, to Apr. 26, 1948, nonrecording gage at datum 60.00 ft lower, Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Records good except those for winter period, which are poor. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--8 years, 584 ft³/s, 10.3 in/yr, 423,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s Mar. 12, 1976, gage height, 17.67 ft; minimum daily, 79 ft³/s Dec. 31, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft, from flood profile, file, discharge, 30,400 ft³/s on basis of slope-area determination of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 4,000 ft/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	1200	*6,270	*13.64	July 1	2230	5,780	13.16
Dec. 28	1745	4,610	12.26	Sept 22	0700	5,690	13.04
Mar. 8	0815	4,760	12.82				

Minimum daily discharge, 230 ft³/s Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	387	1010	921	1830	485	2010	1150	1030	1580	4470	669	611
2	1400	904	909	1640	510	2240	1590	1100	1500	4700	633	583
3	1240	833	909	1480	320	2380	1830	1120	1440	4850	611	566
4	1160	773	930	1400	255	2870	1870	1110	1390	3400	632	540
5	1020	718	1090	1320	240	3330	1790	1030	1330	2760	615	540
6	828	685	1910	1260	235	3470	1690	1000	1280	2550	602	545
7	734	673	2120	1190	230	3900	1620	1180	1230	2050	591	520
8	575	650	1860	1100	240	4360	1610	1060	1170	1810	584	495
9	665	639	1580	1040	285	2590	1610	1770	1120	1650	560	490
10	656	833	1500	1020	335	1890	1600	1520	1080	1550	559	475
11	605	1860	1400	980	370	1620	1600	1400	1040	1450	563	455
12	565	5340	1350	850	425	1450	1720	1440	1010	1370	551	450
13	537	4870	1300	760	450	1340	1880	1710	1040	1280	544	445
14	512	3540	1200	740	485	1270	2370	2200	988	1210	531	430
15	492	2250	1140	740	516	1220	3550	2110	950	1150	531	435
16	466	1900	1060	630	533	1360	3490	1810	922	1100	529	475
17	453	1700	991	600	567	1630	2860	1630	884	1060	527	495
18	440	1550	949	580	583	1970	2450	1560	875	1080	525	495
19	428	1450	929	580	656	2410	2160	1820	884	1200	534	495
20	570	1410	886	590	1800	2100	1970	2330	865	1040	545	1540
21	1190	1360	835	570	2560	1790	1810	2320	794	989	550	4280
22	1960	1310	809	550	2710	1570	1680	2530	741	948	515	4280
23	1370	1220	793	535	2250	1430	1570	2920	732	884	480	1920
24	1140	1100	865	510	1800	1350	1480	2510	698	855	470	1500
25	1010	1010	1160	480	1440	1270	1390	2270	730	831	1860	1280
26	914	962	1300	450	1190	1210	1330	2070	688	788	1360	1130
27	860	897	1290	420	1050	1180	1270	1940	974	765	1080	1010
28	819	890	3580	440	1400	1140	1190	1900	1480	752	886	927
29	822	997	3620	550	---	1090	1140	1820	1690	811	781	846
30	986	947	2810	580	---	1080	1090	1740	2660	764	701	795
31	1170	---	2070	505	---	1070	---	1670	---	709	653	---
TOTAL	26074	44281	44066	25920	23920	59590	54360	54420	33765	50826	20772	29048
MEAN	841	1476	1421	836	854	1922	1812	1755	1126	1640	670	968
MAX	1960	5340	3620	1830	2710	4360	3550	2920	2660	4850	1860	4280
MIN	387	639	793	420	230	1070	1090	1000	688	709	470	430
CFSM	1.09	1.92	1.85	1.09	1.11	2.50	2.35	2.28	1.46	2.13	.87	1.26
IN.	1.26	2.14	2.13	1.25	1.16	2.88	2.63	2.63	1.63	2.46	1.00	1.40
AC-FT	51720	87830	87400	51410	47450	118200	107800	107900	66970	100800	41200	57620

CAL YR 1982	TOTAL	332676	MEAN	911	MAX	5340	MIN	128	CFSM	1.18	IN	16.07	AC-FT	659900
WTR YR 1983	TOTAL	467042	MEAN	1280	MAX	5340	MIN	230	CFSM	1.66	IN	22.56	AC-FT	926400

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE1/4 SE1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi upstream from Wisconsin River, 4.3 mi downstream from Yellow River, and at mile 633.4 upstream from Ohio River.

DRAINAGE AREA.--67,500 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft NGVD. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi upstream in tailwater of dam 9, at datum 5.30 ft lower.

REMARKS.--Records good except those for winter period, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and Lock and Dam No. 10. Minor flow regulation caused by navigation dams.

COOPERATION.--Auxiliary gage-height and discharge data at Lock and Dam No. 9 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--47 years, 34,410 ft³/s, 6.92 in/yr, 24,930,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 276,000 ft³/s Apr. 24, 1965; maximum gage height, 25.38 ft Apr. 24, 1965; minimum daily discharge, 6,200 ft³/s Dec. 9, 1936; minimum gage height, -0.86 ft Aug. 18, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 145,000 ft³/s March 16; maximum gage height, 19.02 ft Mar. 15; minimum daily discharge, 21,000 ft³/s Feb. 4; minimum gage height, 6.85 ft Aug. 16-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	28300	70000	60000	40500	27000	45500	72100	105000	57300	52000	37500	28100		
2	30800	65700	57500	40300	25000	48500	68600	102000	53000	56200	34500	30000		
3	34100	61600	55500	40500	23200	52000	66900	98100	50100	64500	31800	33700		
4	35200	58000	54000	40300	21000	63000	66800	94700	47500	70000	29500	34700		
5	33300	54200	54000	40000	22700	74000	69900	91700	46400	72000	28800	35800		
6	29900	49500	55000	40000	24500	80000	73300	89400	45800	72500	29000	37800		
7	28900	47400	59500	40000	26000	88300	75500	87900	45600	72500	30800	34900		
8	29700	45800	60500	39800	25500	95500	76600	85200	45900	72500	32500	28800		
9	33300	44900	58000	41000	25000	104000	77900	83000	46200	73500	33000	24800		
10	38100	45600	53000	45000	24500	113000	79400	82000	45100	74200	33100	24300		
11	42300	46600	48500	48000	24400	125000	81100	81600	43100	74500	32700	25300		
12	45700	56300	42000	50000	24400	132000	83200	82800	41000	76000	32000	27300		
13	48000	61600	35000	49500	24800	139000	87000	84900	38600	76500	30100	30400		
14	49700	67100	31700	43500	25400	142000	92300	85700	37200	78200	27800	31900		
15	52600	73500	32000	37000	26700	143000	96900	84800	36600	79300	25800	31600		
16	57400	75600	32000	28500	28000	145000	102000	82400	36400	78400	24100	31000		
17	59200	79700	31000	26500	29000	144000	106000	79700	35900	76500	24300	30000		
18	60200	82200	32000	23500	30200	139000	110000	77600	35700	72000	28400	29200		
19	59800	82300	36000	22500	31500	133000	114000	77500	36900	74000	30400	31400		
20	62100	80600	40500	23500	32600	127000	117000	76700	37700	67500	31500	38500		
21	62400	76700	43500	26000	33700	123000	118000	76500	38200	64000	32100	44800		
22	64100	72000	45000	30500	35800	118000	119000	76400	38200	60000	31600	51900		
23	67000	67200	44000	33500	38000	113000	119000	76300	39400	57000	29800	55600		
24	70200	64800	42500	33600	40500	108000	117000	75700	42600	53500	26000	56900		
25	74700	65100	41500	33800	42500	103000	116000	75700	44700	51000	27200	58500		
26	78900	67600	41000	33800	43500	97300	115000	73200	46100	45000	29200	60200		
27	81800	71500	41000	33500	44000	92700	113000	70600	48100	37500	32000	59900		
28	82900	73700	41000	33000	44500	88600	112000	68100	49800	31000	33600	55800		
29	82300	74000	40900	31000	---	83900	110000	66900	51200	35800	32700	49200		
30	78800	64500	40800	29500	---	80800	108000	63900	51800	40500	30000	40500		
31	74500	---	40700	28500	---	77200	---	60900	---	38800	28500	---		
TOTAL	1676200	1945300	1389600	1106600	843900	3218300	2863500	2516900	1312100	1946900	940300	1152800		
MEAN	54070	64840	44830	35700	30140	103800	95450	81190	43740	62800	30330	38430		
MAX	82900	82300	60500	50000	44500	145000	119000	105000	57300	79300	37500	60200		
MIN	28300	44900	31000	22500	21000	45500	66800	60900	35700	31000	24100	24300		
CFSM	.80	.96	.66	.53	.45	1.54	1.41	1.20	.65	.93	.45	.57		
IN	.92	1.07	.77	.61	.47	1.77	1.58	1.39	.72	1.07	.52	.64		
AC-FT	3325000	3859000	2756000	2195000	1674000	6383000	5680000	4992000	2603000	3862000	1865000	2287000		
CAL YR 1982	TOTAL	17311900	MEAN	47430	MAX	139000	MIN	15300	CFSM	.70	IN	9.54	AC-FT	34340000
WTR YR 1983	TOTAL	20912400	MEAN	57290	MAX	145000	MIN	21000	CFSM	.85	IN	11.53	AC-FT	41480000

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected by boat 1.5 mi downstream from discharge station. Prior to April 1981, at bridge on U.S. Highway 18, 1.2 mi upstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1975 to current year.

WATER TEMPERATURES: July 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 882 mg/L Mar. 21, 1982; minimum daily mean, 1 mg/L Dec. 23-25, 1976, Dec. 20, 28, 1977.

SEDIMENT LOADS: Maximum daily, 166,000 tons Mar. 31, 1979; minimum daily, 31 tons Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 248 mg/L July 1; minimum daily mean, 2 mg/L Nov. 24.

SEDIMENT LOADS: Maximum daily, 34,800 tons July 1; minimum daily, 227 tons Feb. 4.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	390	---	---	---	---	---	500	520	---
2	---	---	---	---	---	---	---	525	---	---	---	---
3	---	---	---	---	---	---	---	---	555	---	---	---
4	350	---	---	---	430	465	510	---	---	---	---	---
5	---	---	---	385	---	---	---	---	---	---	520	---
6	---	---	---	---	---	---	---	---	---	500	---	---
7	335	---	---	---	---	450	---	550	---	---	520	---
8	---	---	---	---	410	---	510	---	510	---	520	---
9	---	---	---	380	---	---	---	---	---	500	---	---
10	---	---	---	---	---	---	---	530	---	---	---	---
11	---	---	---	---	---	430	505	490	500	---	480	---
12	330	---	460	---	390	---	---	---	---	520	---	---
13	---	---	---	370	---	---	---	---	---	---	---	---
14	---	---	---	---	---	370	515	455	500	---	400	---
15	---	---	---	---	---	---	---	---	---	520	---	---
16	370	340	450	390	---	---	---	---	---	---	---	350
17	---	---	---	---	310	370	---	---	500	---	---	---
18	---	---	---	---	---	---	480	---	---	520	400	---
19	350	---	---	395	---	---	---	500	---	---	---	350
20	---	---	460	---	---	---	---	---	---	---	---	---
21	---	---	---	---	210	---	470	---	500	520	---	---
22	---	---	---	---	---	490	---	---	460	---	---	335
23	---	---	---	385	---	---	---	520	---	---	400	---
24	---	---	430	---	---	---	---	---	500	520	---	---
25	---	---	---	---	510	---	505	---	---	---	---	---
26	300	360	---	---	---	475	---	---	---	---	---	---
27	---	---	430	430	---	---	---	535	---	520	---	---
28	---	---	---	---	510	---	525	---	500	---	---	---
29	---	---	530	---	---	495	---	---	---	---	---	---
30	330	---	---	420	---	475	---	---	---	---	---	---
31	---	---	---	---	---	---	---	540	---	---	360	---

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---			---	---	---	---	24.0	28.0	---
2	---	---	---			---	---	14.0	---	---	---	---
3	---	6.0	---			---	---	---	17.0	---	---	---
4	15.0	---	1.0			---	6.0	---	---	---	---	25.5
5	---	---	---			---	---	---	---	---	28.0	---
6	---	6.0	---			---	---	---	---	24.0	---	---
7	12.0	---	---			---	---	14.0	---	---	26.0	26.0
8	---	---	6.0			---	6.0	---	22.0	---	28.0	---
9	---	---	---			---	---	---	---	24.0	---	---
10	---	7.0	---			---	---	12.0	---	---	---	24.0
11	---	---	---			---	6.0	---	24.0	---	27.0	---
12	14.0	1.0	---			---	---	---	---	28.0	---	---
13	---	---	---			---	---	15.0	---	---	---	---
14	---	---	---			---	6.0	---	24.0	---	28.0	---
15	---	---	---			---	---	---	---	28.0	---	---
16	9.0	5.0	---			---	---	15.0	---	---	---	18.0
17	---	---	---			---	---	---	24.0	---	---	---
18	---	4.0	---			---	5.0	---	---	28.0	29.0	---
19	10.0	---	---			---	---	15.0	---	---	---	20.0
20	---	---	---			---	---	---	---	---	---	---
21	---	---	---			---	5.0	---	24.0	28.0	---	---
22	9.0	4.0	---			---	---	---	---	---	---	16.0
23	---	---	---			---	---	18.0	---	---	26.0	---
24	---	4.0	---			---	---	---	27.0	28.0	---	---
25	---	---	---			---	6.0	---	---	---	---	---
26	8.0	1.0	---			---	---	---	---	---	---	---
27	---	---	---			---	---	14.0	---	28.0	---	18.0
28	---	---	---			---	13.0	---	23.0	---	28.0	---
29	---	1.0	---			---	---	---	---	---	---	---
30	9.0	---	---			3.0	---	---	---	---	---	14.0
31	---	---	---			---	---	14.0	---	---	29.0	---

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)										
1	21	1600	30	5670	10	1620	3	328	7	510	28	3440
2	27	2250	30	5320	10	1550	4	435	7	472	34	4450
3	57	5250	28	4660	10	1500	5	547	6	376	35	4910
4	82	7790	31	4850	34	4960	11	1200	4	227	40	6800
5	98	8810	34	4980	73	10600	11	1190	5	306	36	7190
6	58	4680	38	5080	89	13200	10	1080	10	661	31	6700
7	27	2110	36	4610	94	15100	9	972	12	842	28	6680
8	26	2080	34	4200	85	13900	13	1400	13	895	32	8250
9	33	2970	32	3880	64	10000	30	3320	29	1960	36	10100
10	36	3700	29	3570	45	6440	37	4500	48	3180	39	11900
11	35	4000	29	3650	26	3400	44	5700	67	4410	43	14500
12	33	4070	50	7600	13	1470	53	7150	83	5470	41	14600
13	39	5050	87	14500	27	2550	60	8020	83	5560	28	10500
14	47	6310	96	17400	50	4280	66	7750	74	5070	17	6520
15	54	7670	74	14700	38	3280	62	6190	65	4690	17	6560
16	58	8990	41	8370	17	1470	54	4160	55	4160	21	8220
17	56	8950	31	6670	17	1420	58	4150	48	3760	23	8940
18	48	7800	24	5330	16	1380	110	6980	70	5710	21	7880
19	37	5970	24	5330	14	1360	163	9900	132	11200	20	7180
20	30	5030	29	6310	12	1310	150	9520	198	17400	18	6170
21	28	4720	35	7250	11	1290	117	8210	214	19500	17	5680
22	26	4500	40	7780	9	1090	77	6340	205	19800	16	5100
23	24	4340	26	4840	6	713	40	3620	187	19200	18	5490
24	25	4740	2	350	4	459	19	1720	173	18900	18	5250
25	25	5240	3	527	4	448	11	1000	153	17600	17	4730
26	27	5750	11	2010	3	332	10	913	117	13700	18	4730
27	30	6630	15	2900	3	332	7	633	73	8670	23	5760
28	33	7390	13	2590	12	1330	7	624	26	3120	28	6700
29	34	7560	11	2200	23	2540	6	502	---	---	30	6800
30	32	6810	10	1740	24	2640	5	398	---	---	26	5670
31	31	6240	---	---	10	1100	6	462	---	---	24	5000
TOTAL	---	169000	---	168567	---	113064	---	108914	---	197349	---	222370

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	24	4670	30	8500	32	4950	248	34800	34	3440	27	2050
2	26	4820	30	8260	31	4440	215	32600	33	3070	25	2030
3	28	5060	29	7680	31	4190	178	31000	32	2750	26	2370
4	30	5410	30	7670	34	4360	167	31600	29	2310	28	2620
5	33	6230	30	7430	37	4640	158	30700	25	1940	34	3290
6	33	6530	30	7240	39	4820	149	29200	24	1880	40	4080
7	29	5910	29	6880	41	5050	125	24500	24	2000	40	3770
8	25	5170	28	6440	45	5580	85	16600	22	1930	34	2640
9	24	5050	26	5830	62	7730	62	12300	20	1780	30	2010
10	24	5150	25	5530	65	7920	56	11200	20	1790	25	1640
11	24	5260	26	5730	47	5470	55	11100	21	1850	25	1710
12	25	5620	28	6260	38	4210	54	11100	24	2070	38	2800
13	25	5870	29	6650	37	3860	50	10300	28	2280	39	3200
14	26	6480	30	6940	38	3820	43	9080	30	2250	39	3360
15	27	7060	30	6870	37	3660	36	7710	22	1530	33	2820
16	27	7440	30	6670	35	3440	34	7200	18	1170	25	2090
17	26	7440	31	6670	32	3100	30	6200	18	1180	24	1940
18	26	7720	31	6500	31	2990	27	5250	31	2380	24	1890
19	27	8310	33	6910	45	4480	27	5390	47	3860	30	2540
20	27	8530	34	7040	58	5900	28	5100	53	4510	33	3430
21	27	8600	35	7230	43	4440	30	5180	58	5030	37	4480
22	26	8350	34	7010	44	4540	29	4700	52	4440	47	6590
23	25	8030	34	7000	58	6170	30	4620	30	2410	61	9160
24	23	7270	38	7770	52	5980	31	4480	17	1190	67	10300
25	21	6580	41	8380	46	5550	31	4270	65	4770	65	10300
26	22	6830	44	8700	45	5600	31	3770	73	5760	47	7640
27	24	7320	46	8770	58	7530	30	3040	40	3460	27	4370
28	26	7860	43	7910	55	7400	29	2430	40	3630	25	3770
29	28	8320	40	7230	45	6220	28	2710	47	4150	26	3450
30	29	8460	36	6210	94	13100	38	4160	36	2920	25	2730
31	---	---	32	5260	---	---	41	4300	30	2310	---	---
TOTAL	---	201350	---	219170	---	161140	---	376590	---	86040	---	115070
TOTAL LOAD FOR YEAR:		2138524		TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
													(00061)	(80154)	(80155)	(70331)
OCT 19...	1200	57600	36	5610	97											
APR 06...	1130	64300	36	6250	95											
JUN 22...	1245	40300	48	5220	91											
APR 06...	1230	64300	6	3	6	46	88	95	97	97	99	100				

05411600 TURKEY RIVER AT SPILLVILLE, IA

LOCATION.--Lat 43°12'28", long 91°56'56", in SW1/4 NE1/4 sec.19, T.97 N., R.9 W., Winneshiek County, on right bank 50 ft downstream from bridge on county highway W14 at north edge of Spillville, 150 ft downstream from old mill dam, 0.6 mi upstream from Wonder Creek and at mile 98.5.

DRAINAGE AREA.--177 mi².

PERIOD OF RECORD.--June 1956 to September 1973, October 1977 to current year. Monthly discharge only for some periods, published in WSP 172B.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 1,034.92 ft NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 124 ft³/s, 9.51 in/yr, 89,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,600 ft³/s July 12, 1972, gage height, 16.73 ft; minimum daily, 4.4 ft³/s Feb. 1-3, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 18.4 ft, from floodmark, discharge, about 10,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	0600	*3,720	*11.88	Apr. 15	0315	2,070	9.69
Dec. 6	1030	1,250	7.99	May 8	0645	1,330	8.32
Dec. 28	0945	2,550	10.26	May 14	0315	1,500	9.19
Feb. 21	2230	1,350	8.25	May 19	2330	1,940	10.00
Mar. 7	0830	2,160	9.73	May 22	1400	2,040	10.17

Minimum daily discharge, 52 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	252	222	353	76	571	615	180	358	725	88	64
2	112	224	245	300	74	633	598	216	330	930	84	60
3	116	204	272	267	74	625	765	202	315	587	83	58
4	131	186	247	261	74	748	564	186	295	524	80	57
5	124	172	519	243	74	793	426	174	277	460	79	59
6	119	165	1120	226	74	1260	403	195	263	350	77	60
7	116	161	660	214	75	1790	450	669	247	301	73	58
8	111	154	467	204	76	815	386	951	234	268	71	55
9	121	155	360	190	76	468	359	482	222	243	69	53
10	125	479	325	191	79	361	412	374	214	222	68	53
11	123	1070	290	175	86	306	590	317	204	208	67	53
12	116	2920	280	160	97	277	508	353	220	192	67	53
13	111	1600	270	150	100	262	611	900	214	180	66	63
14	107	612	260	140	105	264	1510	1050	200	170	65	52
15	104	462	243	130	105	271	1450	611	200	161	63	55
16	99	402	228	120	114	412	719	459	184	152	62	59
17	97	350	216	115	114	750	568	385	174	146	61	62
18	95	317	214	110	123	911	468	365	172	184	60	60
19	102	315	208	105	168	722	406	1280	168	155	58	68
20	482	335	196	100	460	482	361	1200	157	138	57	201
21	877	327	188	96	961	381	329	840	153	128	62	349
22	512	295	184	92	985	327	302	1600	142	120	62	193
23	369	272	190	89	688	296	275	1240	133	117	59	145
24	300	239	247	86	465	278	253	660	131	114	58	123
25	256	230	416	84	306	264	238	560	128	109	86	113
26	226	220	467	82	243	252	227	503	128	104	87	104
27	206	206	377	81	225	238	212	503	187	102	83	99
28	208	222	2000	84	325	233	200	500	234	99	75	95
29	361	230	1260	82	---	237	194	482	294	112	66	88
30	438	218	579	80	---	252	184	447	531	102	67	84
31	295	---	427	78	---	319	---	399	---	95	67	---
TOTAL	6668	12994	13177	4688	6422	15798	14583	18303	6709	7498	2170	2686
MEAN	215	433	425	151	229	510	486	590	224	242	70.0	89.5
MAX	877	2920	2000	353	985	1790	1510	1600	531	930	88	349
MIN	95	154	184	78	74	233	184	174	128	95	57	52
CFSM	1.22	2.45	2.40	.85	1.29	2.88	2.75	3.33	1.27	1.37	.40	.51
IN.	1.40	2.73	2.77	.99	1.35	3.32	3.06	3.85	1.41	1.58	.46	.56
AC-FT	13230	25770	26140	9300	12740	31340	28930	36300	13310	14870	4300	5330
CAL YR 1982	TOTAL	91619	MEAN 251	MAX 2920	MIN 29	CFSM 1.42	IN 19.26	AC-FT 181700				
WTR YR 1983	TOTAL	111696	MEAN 306	MAX 2920	MIN 52	CFSM 1.73	IN 23.47	AC-FT 221500				

TURKEY RIVER BASIN

05412500 TURKEY RIVER AT GARBER, IA

LOCATION.--Lat 42°44'24", Long 91°15'42", in SE1/4 NW1/4 sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on left bank 10 ft downstream from bridge on county highway C43, 800 ft upstream from Wayman Creek, 1,000 ft southeast of Garber, 2,000 ft downstream from Elk Creek, 1 mi downstream from Volga River, and 19.8 mi upstream from mouth.

DRAINAGE AREA.--1,545 mi².

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (M), 1927 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 634.46 ft NGVD. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years (1913-16, 1919-27, 1929-30, 1932-83), 949 ft³/s, 8.34 in/yr, 687,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s Feb. 23, 1922, gage height, 28.06 ft, from flood-mark; minimum daily, 49 ft³/s Jan. 28, 29, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of Feb. 23, 1922.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	1600	* 13,300	*19.37	Apr. 15	1730	9,290	16.72
Dec. 6	2230	8,190	15.88	May 20	2330	8,430	16.06
Dec. 29	0600	8,600	16.37	May 23	2215	9,140	16.63
Feb. 22	0115	11,300	18.33	July 2	1700	10,100	17.25

Minimum daily discharge, 437 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	654	1820	1570	3000	680	2720	2670	1980	3060	6050	977	554
2	632	1880	1670	2570	670	3100	4930	2280	2920	7890	927	533
3	635	1620	1720	2240	670	3170	6210	2340	2680	7940	891	512
4	659	1450	1740	2130	670	3330	5570	2300	2540	5770	873	496
5	674	1320	2440	2020	670	3540	4400	2170	2380	4230	850	496
6	733	1220	7250	1890	680	4890	3760	2120	2260	3400	822	947
7	839	1150	6640	1780	700	6950	3480	2390	2120	2900	800	797
8	717	1090	4430	1630	720	6940	3310	3600	2010	2500	779	597
9	781	1120	3370	1530	740	5300	3230	4160	1920	2260	754	538
10	933	1370	2940	1520	760	3490	3490	3250	1820	2100	704	499
11	895	2370	2590	1530	780	2900	3790	2650	1740	1960	686	476
12	832	12100	2250	1300	800	2620	4040	2620	1680	1840	663	462
13	781	11500	2140	1200	820	2440	4280	2980	1650	1760	648	448
14	753	7380	2060	1140	860	2310	5340	3930	1610	1670	642	437
15	731	4590	2020	1100	900	2250	8680	4590	1510	1580	630	453
16	697	3370	1860	1050	1000	2590	7370	3530	1440	1510	610	507
17	668	2970	1740	1000	1200	3760	5270	3000	1390	1430	693	587
18	660	2640	1690	960	1450	3890	4270	2820	1340	1430	576	774
19	646	2470	1650	920	1700	3810	3750	3920	1370	1450	564	650
20	668	2370	1580	900	6200	3630	3450	7470	1340	1460	544	969
21	777	2280	1480	880	9070	2950	3180	6930	1300	1320	536	1290
22	2050	2180	1430	860	9270	2600	3030	5800	1290	1250	547	1380
23	1890	2080	1410	840	6490	2360	2870	8480	1240	1210	549	1340
24	1480	1900	1520	820	4350	2230	2670	6950	1170	1180	537	1010
25	1310	1750	2070	800	3140	2130	2530	5370	1130	1140	629	871
26	1180	1680	2770	780	2460	2070	2420	4630	1120	1090	885	785
27	1080	1610	2570	760	2140	2090	2320	3840	2620	1050	715	725
28	1050	1580	5380	740	2300	2000	2200	3830	2590	1030	739	674
29	1180	1630	8130	720	---	1970	2120	3750	2440	1240	662	631
30	1250	1610	5620	700	---	2040	2040	3690	4510	1170	613	597
31	1710	---	3820	690	---	2200	---	3420	---	1050	587	---
TOTAL	29545	84100	89550	40000	61890	98270	116670	120790	58090	73860	21532	21035
MEAN	953	2803	2889	1290	2210	3170	3889	3896	1936	2383	695	701
MAX	2050	12100	8130	3000	9270	6950	8680	8480	4510	7940	977	1380
MIN	632	1090	1410	690	670	1970	2040	1980	1120	1030	536	437
CFSM	.62	1.81	1.87	.84	1.43	2.05	2.52	2.52	1.25	1.54	.45	.45
IN.	.71	2.02	2.16	.96	1.49	2.37	2.81	2.91	1.40	1.78	.52	.51
AC-FT	58600	166800	177600	79340	122800	194900	231400	239600	115200	146500	42710	41720

CAL YR 1982	TOTAL	698574	MEAN	1914	MAX	12900	MIN	390	CFSM	1.24	IN	16.82	AC-FT	1386000
WTR YR 1983	TOTAL	815332	MEAN	2234	MAX	12100	MIN	437	CFSM	1.45	IN	19.63	AC-FT	1617000

05418450 NORTH FORK MAQUOKETA RIVER AT FULTON, IA

LOCATION.--Lat 42°08'48", long 90°40'33" in N1/4 sec.25, T.85 N., R.2 E, Jackson County, Hydrologic Unit 07060006, on right downstream bank at bridge on State Highway 61, 7.8 mi upstream from mouth, and 5.5 mi north of junction of State Highway 64 and 61 and 0.5 mi south of Fulton.

DRAINAGE AREA.--516 mi².

PERIOD OF RECORD.--July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 666.19 ft NGVD. Nonrecording gage July 7 to September 22, 1977.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--5 years, 373 ft³/s, 9.82 in/yr, 270,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s Aug. 31, 1981, gage height, 17.26 ft; minimum daily, 70 ft/s July 11, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 18, 1974 reached a stage of 16.0 ft., from floodmark, discharge 10,000 ft/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft/s and maximum (*):

Date	Time	Discharge (ft/s)	Gage height (ft)	Date	Time	Discharge (ft/s)	Gage height (ft)
Dec. 2	0745	*5,040	10.83	July 8	0530	5,020	*10.91
Feb. 20	unknown	unknown	unknown				

Minimum daily discharge, 150 ft³/s Feb. 7-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	672	364	540	210	415	600	427	497	609	244	214
2	198	985	2860	465	210	426	1100	515	472	1040	237	210
3	198	800	1050	405	195	424	1800	540	457	1280	234	207
4	200	493	750	370	170	427	1400	562	445	3630	237	207
5	202	400	1160	391	160	438	1180	526	432	3510	236	207
6	212	355	1380	367	155	515	1020	500	422	3660	233	221
7	247	334	1040	340	150	670	930	511	410	4040	225	230
8	244	319	920	330	150	672	796	502	401	3770	232	219
9	280	409	840	346	153	620	768	459	394	910	231	211
10	367	489	750	349	158	524	950	442	391	406	232	204
11	310	454	690	360	175	470	959	440	381	378	232	205
12	272	1200	650	280	205	447	864	439	371	363	234	203
13	256	1440	660	290	250	433	799	470	364	347	233	196
14	244	780	692	315	280	420	826	481	364	333	232	192
15	244	620	684	280	310	409	817	519	361	326	229	193
16	234	540	644	230	620	405	717	471	356	319	227	222
17	212	493	640	210	1320	397	657	450	349	309	219	233
18	212	457	616	205	840	397	613	479	347	304	219	225
19	212	440	584	200	890	393	582	723	344	311	217	224
20	207	433	524	210	2180	388	554	722	345	310	214	233
21	207	424	512	230	1400	384	534	577	337	304	214	242
22	198	400	532	250	950	364	514	771	331	291	214	223
23	195	388	516	290	1020	345	505	677	330	283	218	212
24	195	370	500	320	660	330	481	580	339	283	221	210
25	198	350	504	260	495	320	466	951	387	280	210	212
26	195	335	482	215	420	335	458	767	390	278	219	220
27	195	330	471	190	375	355	455	639	373	271	233	209
28	200	352	570	200	400	350	441	599	393	263	234	202
29	229	388	650	235	---	330	436	568	456	260	229	201
30	247	379	745	225	---	320	427	544	467	255	222	198
31	244	---	630	215	---	360	---	525	---	252	219	---
TOTAL	7048	15829	23610	9113	14501	13083	22549	17475	11705	29175	7030	6385
MEAN	227	528	762	294	518	422	752	564	390	941	227	213
MAX	367	1440	2860	540	2180	672	1800	951	497	4040	244	242
MIN	.195	319	364	190	150	320	427	427	330	252	210	192
CFSM	.44	1.02	1.48	.57	1.00	.82	1.46	1.09	.76	1.82	.44	.41
IN.	.51	1.14	1.70	.66	1.05	.94	1.63	1.26	.84	2.10	.51	.46
AC-FT	13980	31400	46830	18080	28760	25950	44730	34660	23220	57870	13940	12660
CAL YR 1982	TOTAL	182184	MEAN 499	MAX 5950	MIN 150	CFSM .97	IN 13.13	AC-FT 361400				
WTR YR 1983	TOTAL	177505	MEAN 486	MAX 4040	MIN 150	CFSM .94	IN 12.80	AC-FT 352100				

MAQUOKETA RIVER BASIN

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'05", long 90°38'04", in SW1/4 NE1/4 sec.17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060006, on right bank 500 ft upstream from bridge on State Highway 62, 1,200 ft upstream from Prairie Creek, 2.0 mi northeast of Maquoketa, 2.2 mi downstream from North Fork, and 25.7 mi upstream from mouth.

DRAINAGE AREA.--1,553 mi².

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage recorder. Datum of gage is 525.95 ft NGVD. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at same site at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation caused by powerplant 4 mi above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--70 years, 1,027 ft³/s, 8.98 in/yr, 744,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s June 27, 1944, gage height, 24.70 ft, at datum then in use; minimum daily, 105 ft³/s Feb. 11-20, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft, discharge, 43,000 ft³/s, at datum in use prior to Oct. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,550 ft³/s Feb. 20, gage height, 20.50 ft at 1145 hours, no other peak above base of 7,500 ft³/s; minimum daily, 394 ft³/s Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	531	1430	1150	1750	680	1420	1740	1480	1590	1950	751	587		
2	553	2590	4610	1570	700	1400	4370	1700	1500	3410	738	568		
3	547	3040	3440	1350	600	1420	6050	1970	1440	3360	751	519		
4	574	2090	2830	1230	520	1450	5400	2220	1410	3900	705	559		
5	580	1690	3980	1370	470	1540	4300	1880	1370	4000	713	543		
6	479	1320	5270	1250	450	1850	3660	1600	1330	4100	717	548		
7	605	1280	4640	1200	440	2290	3330	1800	1280	3500	638	587		
8	642	1170	4020	1170	430	2990	2860	1800	1230	2800	622	589		
9	736	1330	3380	1090	440	2420	2790	1650	1220	2250	602	585		
10	839	1510	2830	1080	470	2080	3110	1480	1230	1850	649	561		
11	765	1640	2600	1100	520	1700	3010	1320	1250	1600	646	557		
12	731	3070	2180	960	600	1570	2940	1280	1130	1400	574	548		
13	690	5400	1940	890	700	1450	2850	1380	1050	1290	587	601		
14	678	4440	2090	910	800	1410	3090	1500	1060	1180	596	736		
15	669	3240	2120	920	900	1380	3160	1600	1040	1110	607	562		
16	579	2580	1950	760	3030	1370	3230	1450	1010	1060	603	594		
17	608	1920	1770	680	3900	1400	2810	1300	991	1020	601	394		
18	562	1980	1740	660	3330	1550	2510	1500	978	1010	594	517		
19	582	1480	1740	660	3570	1670	2170	2240	1060	1020	592	590		
20	613	1560	1700	680	6800	1560	2150	2580	1040	1030	582	611		
21	557	1510	1580	740	5760	1430	1990	2870	997	988	553	617		
22	589	1450	1550	840	4600	1370	1890	3310	989	956	577	587		
23	512	1440	1460	900	4160	1280	1730	2520	950	911	570	599		
24	515	1310	1650	940	3050	1240	1680	2170	933	906	568	565		
25	585	1210	1390	860	2440	1200	1610	2420	949	893	578	556		
26	557	1230	1390	700	1870	1220	1570	2210	935	857	597	562		
27	597	1220	1430	580	1640	1360	1520	1980	955	844	616	565		
28	615	1240	1710	570	1480	1260	1490	1840	936	830	593	535		
29	663	1250	1860	760	---	1190	1460	1790	1170	794	589	562		
30	715	1230	2260	840	---	1230	1430	1720	1520	803	597	538		
31	781	---	2040	740	---	1390	---	1680	---	781	603	---		
TOTAL	19259	57850	74300	29750	54350	48090	81900	58240	34543	52413	19309	17042		
MEAN	621	1928	2397	960	1941	1551	2730	1879	1151	1691	623	568		
MAX	839	5400	5270	1750	6800	2990	6050	3310	1590	4100	751	736		
MIN	479	1170	1150	570	430	1190	1430	1280	933	781	553	394		
CFSM	.40	1.24	1.54	.62	1.25	1.00	1.76	1.21	.74	1.09	.40	.37		
IN.	.46	1.39	1.78	.71	1.30	1.15	1.96	1.40	.83	1.26	.46	.41		
AC-FT	38200	114700	147400	59010	107800	95390	162400	115500	68520	104000	38300	33800		
CAL YR 1982	TOTAL	589764	MEAN	1616	MAX	13500	MIN	473	CFSM	1.04	IN	14.13	AC-FT	1170000
WTR YR 1983	TOTAL	547046	MEAN	1499	MAX	6800	MIN	394	CFSM	.97	IN	13.10	AC-FT	1085000

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°46'53", long 90°15'04", in NW1/4 sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07080101, on right bank at foot of Seventh Avenue in Camanche, 5.0 mi upstream from Wapsipinicon River, 6.4 mi downstream from Clinton, 10.6 mi downstream from dam 13, and at mile 511.8 upstream from Ohio River. Prior to June 6, 1969, at site 400 ft downstream.

DRAINAGE AREA.--85,600 mi², approximately, at Fulton-Lyons Bridge at Clinton.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire").

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft NGVD. Oct. 1, 1955, to June 5, 1969, water-stage recorder at site 400 ft downstream at same datum. Auxiliary water-stage recorder at dam 13 since Oct. 1, 1958. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for winter period, which are poor. Minor flow regulation caused by navigation dams.

COOPERATION.--Discharge data at Lock and Dam No.13 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--110 years, 47,390 ft³/s, 7.52 in/yr, 34,330,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 307,000 ft³/s Apr. 28, 1955; maximum gage height, 24.65 ft Apr. 28, 1965; minimum daily discharge, 6,500 ft³/s Dec. 25-27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828, that of Apr. 28, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 179,000 ft³/s Mar. 18-19; maximum gage height, 18.97 ft Mar. 19, minimum daily discharge, 27,000 ft³/s Jan. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36000	90000	77800	54000	38000	61600	94700	123000	87400	70900	46200	38000
2	37500	88000	85600	56900	37000	64700	95600	122000	83200	74600	44400	35000
3	39500	84000	93500	56000	35000	67500	99700	122000	77300	77500	41700	35500
4	41200	80000	76400	55500	31000	70400	103000	119000	72200	82100	37500	36300
5	41800	75000	67900	56000	30000	73000	89400	113000	68700	84100	35800	40300
6	42000	70000	69000	55000	31000	75000	90600	108000	65800	82300	34600	45000
7	42000	64000	74500	55000	31000	85100	88600	106000	60200	80900	34400	47700
8	42500	60000	77900	54500	31000	93700	88200	99700	60800	79600	36100	46600
9	42800	57000	81000	53000	31000	100000	88500	98000	61000	78600	35700	38000
10	44200	54000	78700	56800	32000	104000	91300	97100	63000	78400	36000	31500
11	46300	55800	73800	58900	31500	111000	94400	96800	63600	78300	35300	29500
12	50000	58300	53000	52000	32500	122000	94900	95000	62200	78100	39700	29300
13	53000	66700	36500	46000	33000	130000	95500	93900	60200	77800	37800	32200
14	56500	78300	39000	49000	34000	136000	99900	95900	54400	77800	35000	36300
15	61500	81900	42900	47500	37000	153000	104000	95300	49100	78100	33600	36400
16	65800	83800	47300	43500	40000	164000	108000	96200	46400	78300	32300	37600
17	68000	85900	49000	37500	48500	174000	113000	96600	46500	78300	31900	37900
18	70800	85200	49600	27000	52000	179000	119000	96600	47800	78600	29800	37400
19	71100	86900	52200	29000	52000	179000	123000	96000	48200	79000	33600	37500
20	72000	93100	53900	30000	60000	174000	126000	96900	49300	79700	36700	38600
21	74000	98200	54100	33000	69200	167000	130000	96900	48500	79700	36700	43800
22	74500	99000	53900	35000	74700	159000	134000	97400	47400	77600	35700	48000
23	74000	94100	56200	38000	78400	152000	138000	99100	45700	74900	36100	51300
24	74000	91300	59500	38500	77800	144000	140000	97900	47100	71500	36700	56500
25	80000	84000	62700	41500	76600	137000	141000	96400	47400	67600	35300	62400
26	85000	75900	62500	43000	72700	130000	139000	94800	48100	61900	35300	67700
27	86000	72100	61600	44000	66800	124000	137000	93700	52100	56400	39200	69100
28	83000	72200	59000	44000	61600	116000	133000	92500	57500	50100	44800	69200
29	87000	74400	61300	43500	---	108000	129000	92100	61400	48100	46300	67800
30	89000	77200	58000	42000	---	101000	127000	90800	66800	46400	45700	64500
31	90000	---	52000	39500	---	96100	---	89800	---	46300	41000	---
TOTAL	1921000	2336300	1920300	1415100	1325300	3752100	3355300	3109400	1749300	2253500	1160900	1346900
MEAN	61970	77880	61950	45650	47330	121000	111800	100300	58310	72690	37450	44900
MAX	90000	99000	93500	58900	78400	179000	141000	123000	87400	84100	46300	69200
MIN	36000	54000	36500	27000	30000	61600	88200	89800	45700	46300	29800	29300
CFSM	.72	.91	.72	.53	.55	1.41	1.31	1.17	.68	.85	.44	.53
IN.	.83	1.02	.83	.61	.58	1.63	1.46	1.35	.76	.98	.50	.59
AC-FT	3810000	4634000	3809000	2807000	2629000	7442000	6655000	6167000	3470000	4470000	2303000	2672000
CAL YR 1982 TOTAL	21740000		MEAN 59560	MAX 163000	MIN 18000	CFSM .70	IN 9.45	AC-FT 43120000				
WTR YR 1983 TOTAL	25645400		MEAN 70260	MAX 179000	MIN 27000	CFSM .82	IN 11.14	AC-FT 50870000				

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected near bridge on State Highway 136 in Clinton, 6.4 mi upstream from discharge station.

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1976; October 1978 to September 1981.
WATER TEMPERATURES: October 1974 to current year.

REMARKS.--Temperature data were collected at Dam 13 (Sta. 05420400).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 560 micromhos Nov. 24 to Dec. 3, 1979; minimum daily, 220 micromhos Apr. 19, 20, 1976; Nov. 8-18, 1980.

WATER TEMPERATURES: Maximum, 31.5°C July 21-23, 1983; minimum, 0.0°C on many days during winter periods each year.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 31.5°C July 21-23; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX MIN		MAX MIN		MAX MIN		MAX MIN		MAX MIN		MAX MIN	
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.0	16.5	---	---	1.5	1.0	.0	.0	.0	.0	2.0	1.5
2	17.0	16.5	---	---	4.0	1.5	.0	.0	.0	.0	3.0	2.0
3	17.5	16.5	---	---	4.0	4.0	.0	.0	.0	.0	4.0	2.5
4	17.5	16.5	6.0	5.0	4.0	3.5	.0	.0	.0	.0	4.5	3.5
5	17.5	17.0	5.0	4.0	4.0	4.0	.0	.0	.0	.0	5.5	4.0
6	17.5	17.0	4.5	3.5	4.0	---	.0	.0	.0	.0	7.0	5.5
7	17.5	16.0	6.0	4.0	---	---	.0	.0	.0	.0	7.5	6.0
8	16.5	15.5	6.0	5.5	---	---	.0	.0	.0	.0	7.0	4.5
9	16.5	15.5	6.0	5.0	---	---	.0	.0	.0	.0	4.5	3.0
10	15.0	14.0	5.5	5.0	---	---	.0	.0	.0	.0	2.5	2.0
11	14.0	12.5	6.0	5.5	---	---	.0	.0	.0	.0	2.0	2.0
12	13.5	12.6	6.5	3.5	---	---	.0	.0	.0	.0	2.5	1.5
13	12.5	11.5	3.5	2.5	---	---	.0	.0	.0	.0	2.5	2.0
14	12.5	11.5	2.5	2.0	.0	.0	.0	.0	.0	.0	2.5	2.0
15	12.5	11.5	2.0	1.0	.0	.0	.0	.0	.0	.0	2.5	2.5
16	12.5	10.5	1.5	1.5	.0	.0	.0	.0	.5	.0	3.5	2.5
17	11.5	10.5	1.5	1.5	.0	.0	.0	.0	.5	.5	3.5	3.0
18	11.5	11.5	2.0	1.5	.0	.0	.0	.0	.5	.0	3.0	3.0
19	11.5	10.5	3.5	1.5	.0	.0	.0	.0	.0	.0	3.0	2.0
20	10.5	9.0	5.0	3.5	.0	.0	.0	.0	.5	.0	2.0	2.0
21	9.0	8.0	4.5	4.0	.0	.0	.0	.0	.5	.5	2.0	1.5
22	9.5	8.5	4.0	3.5	.0	.0	.0	.0	.5	.5	2.0	2.0
23	9.5	8.5	3.5	1.0	.0	.0	.0	.0	1.0	1.0	2.0	2.0
24	9.5	8.5	1.0	1.0	1.0	.0	.0	.0	1.0	1.0	2.5	2.0
25	9.0	8.0	1.0	1.0	1.5	1.0	.0	.0	1.0	.5	2.5	2.0
26	8.5	8.0	1.0	1.0	1.5	1.0	.0	.0	.5	.5	3.0	2.0
27	---	---	1.0	1.0	1.0	1.0	.0	.0	1.0	.5	3.0	2.0
28	---	---	1.0	1.0	1.5	.0	.0	.0	1.5	1.0	2.0	2.0
29	---	---	1.0	1.0	.5	.0	.0	.0	---	---	3.0	2.0
30	---	---	1.0	1.0	.0	.0	.0	.0	---	---	3.0	3.0
31	---	---	---	---	.0	.0	.0	.0	---	---	3.5	3.0
MONTH	17.5	8.0	6.5	1.0	4.0	.0	.0	.0	1.5	.0	7.5	1.5

MISSISSIPPI RIVER MAIN STEM
05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.0	3.5	16.0	13.5	19.0	17.5	25.0	25.0	29.5	28.0	27.0	26.0
2	4.5	4.0	13.5	13.0	20.0	18.0	25.5	24.5	29.5	28.5	27.0	26.0
3	4.0	3.5	14.5	13.0	20.0	19.0	25.0	25.0	29.0	28.0	27.0	26.0
4	4.5	4.0	14.5	13.5	20.5	18.5	25.0	24.0	29.5	28.0	26.5	26.0
5	---	---	14.5	13.5	20.5	19.0	25.5	24.0	29.5	28.5	26.0	25.5
6	5.0	4.5	16.0	14.0	---	---	25.5	23.5	29.5	28.5	25.5	24.5
7	5.5	4.5	15.5	12.5	21.0	19.0	25.5	23.5	30.0	28.5	25.0	24.0
8	6.5	5.0	14.5	12.0	22.0	20.0	25.0	24.0	30.0	28.0	25.5	24.5
9	5.0	4.0	13.5	13.0	22.0	20.5	27.0	25.0	30.0	28.5	25.5	25.0
10	5.0	5.0	15.5	13.5	23.5	21.5	27.5	26.0	28.5	28.0	26.0	24.5
11	6.5	4.5	16.0	14.5	24.5	22.5	28.5	26.5	28.0	27.0	24.5	24.0
12	8.0	6.5	16.5	15.5	25.0	23.0	29.0	27.5	27.0	26.5	24.0	21.5
13	8.0	6.5	17.5	16.5	25.0	23.5	29.5	28.0	27.0	26.0	22.5	---
14	6.5	4.5	17.0	16.0	24.5	23.5	29.5	28.0	27.0	26.0	22.0	---
15	6.0	5.0	17.0	15.0	25.0	24.0	30.0	28.5	26.5	26.0	20.0	19.5
16	5.5	4.5	16.5	15.5	24.5	23.5	30.0	29.0	27.0	26.0	20.0	19.5
17	6.5	4.5	16.5	16.0	25.0	23.5	30.5	29.0	28.0	27.0	20.0	19.5
18	7.0	5.5	18.0	16.0	25.0	24.0	31.0	29.5	28.5	28.0	20.5	19.5
19	7.5	6.0	19.0	17.5	---	---	30.5	29.5	29.0	28.5	20.5	18.5
20	8.5	7.0	19.0	17.5	25.5	---	31.0	29.0	30.0	29.0	18.5	16.5
21	9.5	8.0	---	---	26.5	25.0	31.5	30.0	29.0	28.5	16.5	15.0
22	11.0	9.5	---	---	27.0	26.0	31.5	30.0	28.5	28.0	15.5	13.5
23	11.5	11.0	19.0	17.0	27.5	---	31.5	30.5	28.0	27.0	15.0	14.0
24	12.0	10.5	20.0	18.0	29.5	28.0	30.5	29.0	27.5	27.0	14.5	14.0
25	13.5	11.5	20.0	18.5	29.0	27.5	30.0	28.5	27.5	27.0	14.5	14.0
26	14.0	12.5	20.5	18.5	29.0	28.0	30.0	28.5	27.5	26.5	15.0	14.5
27	14.5	13.5	19.5	18.5	29.0	27.5	29.0	28.0	26.5	26.0	16.0	14.5
28	15.0	14.0	19.5	18.0	27.0	25.5	29.0	28.0	27.5	26.5	17.5	16.0
29	15.5	14.5	19.0	18.0	25.5	24.5	30.0	29.0	28.0	26.5	18.0	17.0
30	16.5	14.5	18.0	17.0	26.0	25.0	29.5	29.0	27.0	26.0	19.0	18.0
31	---	---	17.5	16.5	---	---	30.0	29.0	26.5	---	---	---
MONTH	16.5	3.5	20.5	12.0	29.5	17.5	31.5	23.5	30.0	26.0	27.0	13.5
YEAR	31.5	.0										

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, SATURATION (PERCENT) (00301)	BAROMETRIC PRESSURE (MM HG) (00025)	COLIFORM, FECAL, UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI, FECAL, KF AGAR (COLS./100 ML) (31673)	HARDNESS AS CaCO3 (MG/L) (00900)
NOV , 1982												
09...	1115	45400	315	7.7	6.0	22	11.1	89	--	150	1500	160
MAR , 1983												
14...	1230	148000	295	7.5	2.5	27	--	--	741	250	1300	130
MAY												
10...	1145	99900	425	9.0	13.5	15	12.2	118	754	K27	K71	220
AUG												
12...	1130	42000	425	8.3	25.0	12	6.8	85	740	K150	230	220

K Results based on colony count outside acceptable range (non-ideal colony count).

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS, DIS-SOLVED TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, DIS-SOLVED TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (B0154)
NOV , 1982												
09...	197	188	.27	24100	1.5	<.150	2.20	.060	--	.070	.150	59
MAR , 1983												
14...	164	163	.22	65500	1.9	.340	1.50	.060	.67	.070	.220	93
MAY												
10...	277	247	.38	74700	2.5	<.060	2.40	.020	--	.030	.120	51
AUG												
12...	251	246	.34	28500	.66	.080	.80	.090	.49	.120	.160	28

DATE	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	
NOV , 1982												
09...		7270	98	1	40	42	<1	<1	<1	<3	<3	150
MAR , 1983												
14...		37200	95	1	30	39	<1	<1	<1	<3	3	200
MAY												
10...		13800	95	1	10	49	<1	<1	<5	<5	<5	13
AUG												
12...		3180	88	3	10	62	<1	<1	<1	<3	4	10

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV , 1982											
09...	<2	8	22	<.1	<10	1	1	<1	76	<6.0	3
MAR , 1983											
14...	<1	9	25	<.1	<10	3	<1	<1	64	<6.0	16
MAY											
10...	<1	17	3	<.1	<10	1	2	<1	130	<6.0	11
AUG											
12...	<1	10	3	.1	<10	<1	1	<1	120	<6.0	43

05420560 WAPSIPINICON RIVER NEAR ELMA, IA

LOCATION.--Lat 43°14'34", long 92°31'48", in NW1/4 NW1/4 sec.8, T.97 N., R.14 W., Howard County, Hydrologic Unit 07080102, on right bank 10 ft downstream from bridge on county highway B17, 0.2 mi downstream from small left-bank tributary, 4.8 mi west of Elma, and at mile 217.9.

DRAINAGE AREA.--95.2 mi².

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,130.05 ft NGVD.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 5-25, Jan. 30 to Feb. 16 and winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 66.9 ft³/s, 9.54 in/yr, 48,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s June 4, 1974, gage height, 14.94 ft, from high-water mark in well; maximum gage height, 15.38 ft, from high-water mark in well, probably occurred Aug. 22, 1979 (backwater from vegetation); minimum daily discharge, 1.9 ft³/s Feb. 4-8, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	1530	700	10.94	May 19	0330	1,280	12.43
Oct. 21	1200	1,000	11.96	May 22	1045	889	11.64
Nov. 12	2100	2,840	13.58	May 29	0645	610	10.45
Dec. 28	0545	1,070	12.10	July 3	0215	918	11.70
Mar. 7	unknown	2,000	13.11	Sep. 20	2345	*3,730	*13.94
Apr. 15	0530	1,740	12.93				

Minimum daily discharge, 12 ft³/s Aug. 16-20, Sept. 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	630	151	92	130	30	338	320	75	134	417	18	20
2	539	134	112	110	27	417	348	78	115	722	17	17
3	528	124	123	92	21	503	358	90	103	556	17	16
4	304	109	111	87	22	689	261	85	96	293	18	14
5	195	99	250	83	24	771	201	78	85	278	17	15
6	158	92	509	80	26	1060	222	75	77	170	16	17
7	154	87	313	72	27	1780	242	208	72	135	15	15
8	146	84	211	63	27	844	200	258	67	112	15	14
9	126	82	138	65	27	280	176	159	62	95	14	13
10	113	551	118	68	27	199	230	130	56	81	14	13
11	102	1200	95	58	28	160	328	110	51	70	13	13
12	93	2390	77	38	28	143	359	103	52	59	13	12
13	87	1660	86	44	29	134	370	244	51	51	13	12
14	82	318	103	50	31	140	1170	291	51	48	13	12
15	77	200	92	39	34	147	1570	239	50	44	13	14
16	71	165	83	39	39	198	732	194	44	39	12	24
17	67	146	76	42	47	262	448	163	41	35	12	30
18	65	132	76	38	62	373	315	152	48	33	12	26
19	65	132	75	40	117	379	264	1110	59	32	12	54
20	474	147	71	41	299	290	224	725	57	30	12	1350
21	883	148	65	41	485	215	196	398	75	27	13	2520
22	296	125	65	40	507	160	168	618	65	25	16	425
23	199	102	67	39	370	140	148	332	55	24	13	180
24	162	83	87	39	260	130	128	243	49	28	13	133
25	138	87	159	37	190	120	116	225	45	25	18	105
26	122	90	185	34	156	116	106	159	53	23	25	90
27	110	59	159	30	112	108	97	144	178	21	25	77
28	109	88	919	33	169	104	89	189	219	21	23	68
29	392	96	878	35	---	110	83	447	213	23	17	60
30	285	90	310	34	---	120	79	215	339	22	22	54
31	189	---	180	32	---	200	---	162	---	19	27	---
TOTAL	6951	9001	5885	1673	3221	10630	9548	7699	2662	3558	498	5413
MEAN	225	300	190	54.0	115	343	318	248	88.7	115	16.1	180
MAX	883	2390	919	130	507	1780	1570	1110	339	722	27	2520
MIN	65	59	65	30	21	104	79	75	41	19	12	12
CFSM	2.36	3.15	2.00	.57	1.21	3.60	3.34	2.61	.93	1.21	.17	1.89
IN.	2.72	3.52	2.30	.65	1.26	4.15	3.73	3.01	1.04	1.39	.19	2.12
AC-FT	13810	17850	11670	3320	6390	21080	18940	15270	5280	7060	988	10740

CAL YR 1982 TOTAL 55237.3 MEAN 151 MAX 2390 MIN 8.2 CFSM 1.59 IN 21.58 AC-FT 109600
WTR YR 1983 TOTAL 66749.0 MEAN 183 MAX 2520 MIN 12 CFSM 1.92 IN 26.08 AC-FT 132400

WAPSIPINICON RIVER BASIN

05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA

LOCATION.--Lat 42°27'49", long 91°53'42", in SE1/4 sec.4, T.88 N., R.9 W., Buchanan County, Hydrologic Unit 07080102, on right bank at Sixth Street in Independence, 1,800 ft downstream from dam at abandoned hydroelectric plant, 4.9 mi downstream from Otter Creek, 9.7 mi upstream from Pine Creek, and at mile 142.5.

DRAINAGE AREA.--1,048 mi².

PERIOD OF RECORD.--July 1933 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1938-39, 1940 (M), 1947.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 882.85 ft NGVD. Prior to May 24, 1941 nonrecording gage in tailrace of powerplant 1,800 ft upstream at datum 80.00 ft lower.

REMARKS.--Records excellent. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years, 620 ft³/s, 8.03 in/yr, 449,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft³/s July 18, 1968, gage height, 21.11 ft; minimum daily, 7.0 ft³/s for several days in 1934 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, that of July 18, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 22	2145	4,180	8.22	May 26	0315	5,900	9.77
Mar. 10	2315	5,780	9.48	July 4	0100	*7,650	*11.11
Apr. 18	0830	6,080	9.85				

Minimum daily discharge, 91 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	146	1010	910	2810	270	2250	1810	970	2420	3430	327	153		
2	146	1370	940	2510	245	2060	2060	1010	2460	3990	285	142		
3	146	1470	1010	2380	220	2010	2770	1280	2410	6080	271	128		
4	294	1370	1010	2400	205	2180	3040	1530	2070	7210	256	109		
5	472	1170	1330	2000	200	2450	3050	1550	1650	6730	248	115		
6	489	940	2730	1540	195	3060	3060	1470	1410	5530	238	162		
7	506	850	3550	1300	190	4030	3050	1480	1250	4090	222	144		
8	531	762	3570	1030	200	4360	2770	1500	1100	2990	212	143		
9	609	735	3050	910	210	4720	2450	1490	982	2290	194	147		
10	699	840	2920	990	230	5420	2450	1590	884	1750	179	132		
11	566	1130	2480	810	245	5380	2550	1790	808	1380	156	112		
12	497	2190	1710	627	260	4200	2640	2220	753	1130	141	105		
13	455	3390	1620	663	273	3220	2750	2340	714	923	133	96		
14	407	3920	1600	708	287	2610	3270	2040	725	800	120	91		
15	383	3790	1510	540	309	2100	4610	1840	758	715	116	99		
16	338	3620	1430	472	360	2040	5110	1880	703	643	111	114		
17	323	3910	1240	440	422	2620	5760	2010	644	580	112	101		
18	309	3750	1180	420	531	2650	5910	2220	631	531	101	115		
19	294	3180	1090	410	820	2750	4940	3000	675	510	101	158		
20	323	2650	970	400	1970	2790	3880	2950	717	504	96	308		
21	316	2050	870	420	3030	2690	3170	3070	972	493	102	422		
22	399	1700	830	430	3880	2570	2610	3960	1120	446	99	677		
23	566	1550	820	420	4050	2450	2120	5260	1230	399	96	905		
24	726	1410	920	400	3790	2210	1760	5200	1130	372	104	1100		
25	810	1290	1400	370	3980	1850	1550	5380	929	355	109	1230		
26	850	1200	1700	320	3580	1650	1400	5680	817	336	110	1150		
27	870	1040	1720	295	3140	1540	1280	4610	968	296	128	1140		
28	800	1000	2710	320	2640	1440	1160	3570	1420	133	138	953		
29	735	970	3620	345	---	1420	1090	3000	1550	374	142	628		
30	810	940	3140	320	---	1440	1020	2730	2370	475	181	494		
31	860	---	3100	300	---	1570	---	2490	---	398	167	---		
TOTAL	15575	55197	56680	27300	35732	83740	85190	81110	36270	55883	4995	11373		
MEAN	506	1840	1828	881	1276	2701	2840	2616	1209	1803	161	379		
MAX	870	3920	3620	2810	4050	5420	5910	5680	2460	7210	327	1230		
MIN	146	735	820	295	190	1420	1020	970	631	133	96	91		
CFSM	.48	1.76	1.74	.84	1.22	2.58	2.71	2.50	1.15	1.72	.15	.36		
IN.	.56	1.96	2.01	.97	1.27	2.97	3.02	2.88	1.29	1.98	.18	.40		
AC-FT	31090	109500	112400	54150	70870	166100	169000	160900	71940	110800	9910	22560		
CAL YR 1982	TOTAL	446048	MEAN	1222	MAX	7680	MIN	118	CFSM	1.17	IN	15.83	AC-FT	884700
WTR YR 1983	TOTAL	549145	MEAN	1505	MAX	7210	MIN	91	CFSM	1.44	IN	19.49	AC-FT	1089000

WAPSIPINICON RIVER BASIN

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW1/4 NE1/4 sec.6, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft upstream from bridge on U.S. Highway 61, 0.9 mi downstream from Silver Creek, 4.0 mi south of water tower in De Witt, 6.2 mi upstream from Brophy Creek, and 18.2 mi upstream from mouth.

DRAINAGE AREA.--2,330 mi².

PERIOD OF RECORD.--June 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage recorder. Datum of gage is 598.81 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--49 years, 1,537 ft³/s, 8.96 in/yr, 1,114,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s May 17, 1974, gage height, 13.07 ft; minimum daily, 46 ft³/s Jan. 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	0400	6,160	10.48	Apr. 24	0415	8,480	11.37
Dec. 7	1245	*11,300	*11.67	June 1	1100	8,350	11.14
Mar. 16	1745	6,960	11.07	July 12	0415	7,680	11.34
Apr. 4	0400	8,840	11.63				

Minimum daily discharge, 387 ft³/s Sept. 20-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	731	1470	2430	5060	1090	5510	3030	2580	8080	2250	810	437
2	696	2050	4090	5580	1020	5190	5280	2590	7050	3500	744	437
3	661	2870	8240	5860	900	4400	8320	2650	4980	5150	813	437
4	637	3170	8360	5470	800	3700	8650	2810	4170	5540	812	447
5	609	2850	6680	4850	740	3380	8040	2900	3850	5620	747	428
6	596	2660	9450	4470	700	3440	7620	2990	3720	5800	709	423
7	600	2500	11100	4270	680	3800	7380	3110	3480	6080	683	417
8	600	2300	9720	3790	700	4030	7080	3190	3060	6280	655	404
9	773	2110	7500	3270	780	4330	6990	3070	2650	6400	625	396
10	1050	2000	7050	2890	900	4730	7080	3040	2490	7050	604	399
11	1080	2090	6400	2650	970	5110	6990	3030	2360	7470	613	406
12	1080	2940	5800	2400	1040	5540	6680	2950	2130	7680	574	404
13	1130	3890	5200	2300	1060	5860	6450	3040	1960	5740	556	398
14	1120	5030	4700	2000	1100	6250	6280	3370	1830	3100	552	389
15	1050	5660	4280	1880	1230	6620	6320	3710	1720	2530	545	389
16	982	5880	3950	1700	1860	6880	6250	3840	1630	2260	531	393
17	928	5800	3790	1500	3460	5850	6320	3750	1570	2070	510	393
18	888	5880	3530	1170	3410	4130	6500	3510	1570	1860	498	393
19	871	6100	3310	1060	3690	3560	6750	3820	1660	1710	486	390
20	1140	6180	3090	1000	5010	3440	7110	4140	1670	1580	473	387
21	1060	5880	2920	1100	5470	3710	7530	4700	1570	1470	457	387
22	946	5950	2720	1310	4750	3720	7920	5360	1550	1370	445	387
23	894	5680	2570	1500	4490	3720	8280	5760	1540	1290	438	388
24	866	4420	2610	1590	4650	3670	8440	5760	1590	1220	433	430
25	853	3420	2760	1460	4910	3550	7770	5620	1680	1170	430	510
26	883	2960	2740	1300	5190	3440	5500	5780	1730	1110	441	676
27	987	2650	2750	1100	5480	3460	3990	6220	1740	1050	426	854
28	1110	2570	3260	1070	5610	3650	3400	6820	1660	1000	426	1020
29	1290	2690	3790	1130	---	3300	3050	7350	1600	956	427	1130
30	1420	2550	4030	1190	---	3050	2810	7650	1900	919	433	1160
31	1460	---	4470	1150	---	2970	---	7920	---	892	437	---
- TOTAL	28991	112200	153290	77070	71690	133990	193810	133030	78190	102117	17333	15109
MEAN	935	3740	4945	2486	2560	4322	6460	4291	2606	3294	559	504
MAX	1460	6180	11100	5860	5610	6880	8650	7920	8080	7680	813	1160
MIN	596	1470	2430	1000	680	2970	2810	2580	1540	892	426	387
CFSM	.40	1.61	2.12	1.07	1.10	1.86	2.77	1.84	1.12	1.41	.24	.22
IN.	.46	1.79	2.45	1.23	1.14	2.14	3.09	2.12	1.25	1.63	.28	.24
AC-FT	57500	222500	304100	152900	142200	265800	384400	263900	155100	202500	34380	29970
CAL YR 1982 TOTAL		1109158	MEAN 3039	MAX 11100	MIN 500	CFSM 1.30	IN 17.71	AC-FT 2200000				
WTR YR 1983 TOTAL		1116820	MEAN 3060	MAX 11100	MIN 387	CFSM 1.31	IN 17.83	AC-FT 2215000				

CROW CREEK BASIN

05422470 CROW CREEK AT BETTENDORF, IA

LOCATION.--Lat 41°33'03", long 90°27'15", in NW1/4 NW1/4 sec.24, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 200 ft upstream from bridge on Valley Road (old U.S. Highway 67), 3.5 mi east of U.S. Highway 6, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--17.8 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 576.23 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--6 years, 17.3 ft³/s, 13.20 in/yr, 12,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,490 ft³/s June 15, 1982, gage height, 10.24 ft; minimum daily, 0.23 ft³/s (corrected) Sept. 10, 11, 26-28, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 6	1930	323	5.38	May 13	1830	286	5.22
Oct. 9	1830	276	5.19	June 29	2200	*1,960	*9.36
Dec. 2	1100	401	5.70	July 2	unknown	unknown	unknown
Apr. 2	1030	479	5.86				

Minimum daily discharge, 1.4 ft³/s Sept. 2-4, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.3	5.9	8.1	24	8.6	13	81	19	42	191	3.9	1.6		
2	2.3	10	160	23	8.4	13	233	28	40	250	3.6	1.4		
3	2.3	5.9	132	22	8.2	13	118	21	36	130	3.5	1.4		
4	2.4	5.7	110	21	8.0	13	85	18	37	200	3.4	1.4		
5	2.5	5.4	96	21	7.8	14	81	16	32	90	3.1	1.5		
6	30	5.1	80	20	7.6	39	83	16	16	50	3.1	8.6		
7	89	6.0	70	19	7.4	23	83	15	14	37	3.2	2.7		
8	69	5.2	60	19	7.6	18	73	14	12	31	2.9	1.9		
9	169	4.9	52	19	8.0	15	126	13	11	27	2.8	1.7		
10	58	4.6	43	18	9.0	13	91	12	16	23	2.6	1.6		
11	17	25	38	18	10	13	75	12	11	20	3.6	2.0		
12	10	32	34	17	12	12	69	13	10	17	2.9	1.8		
13	6.5	15	31	16	15	12	67	62	9.9	15	2.6	1.5		
14	4.8	12	29	15	20	12	63	35	9.3	14	3.2	1.4		
15	4.6	10	27	14	24	11	52	20	9.3	12	3.2	5.9		
16	4.1	9.9	26	13	59	11	47	21	9.8	11	2.7	6.3		
17	4.1	8.2	25	12	24	10	43	21	8.0	9.9	2.5	2.4		
18	3.8	7.7	24	11	20	10	42	22	16	16	2.2	3.1		
19	36	7.4	23	10	25	11	38	21	34	12	2.1	12		
20	39	7.3	22	9.4	25	10	35	19	9.6	8.5	2.0	7.8		
21	9.8	6.1	21	9.0	22	11	33	17	7.8	8.0	1.7	4.0		
22	8.4	5.9	20	8.8	27	10	32	23	6.5	6.8	2.5	2.3		
23	7.7	6.1	20	8.7	22	10	30	18	6.6	6.2	2.0	2.0		
24	6.9	5.1	19	8.3	20	9.9	28	15	6.5	5.9	1.7	1.7		
25	6.2	8.4	19	8.7	17	9.9	25	15	6.5	5.9	1.6	1.9		
26	5.2	5.0	22	8.4	14	13	24	16	6.5	5.8	1.5	2.4		
27	5.5	4.6	30	8.2	13	60	21	16	6.1	4.8	1.6	1.9		
28	5.6	23	41	8.0	14	45	21	17	6.5	4.6	2.3	1.9		
29	10	13	32	8.4	---	38	20	16	329	4.3	1.9	1.9		
30	5.4	9.4	27	9.0	---	37	21	14	292	5.4	1.8	1.9		
31	4.8	---	25	8.8	---	38	---	25	---	4.1	1.9	---		
TOTAL	632.2	279.8	1366.1	435.7	463.6	567.8	1840	610	1056.9	1226.2	79.6	89.9		
MEAN	20.4	9.33	44.1	14.1	16.6	18.3	61.3	19.7	35.2	39.6	2.57	3.00		
MAX	169	32	160	24	59	60	233	62	329	250	3.9	12		
MIN	2.3	4.6	8.1	8.0	7.4	9.9	20	12	6.1	4.1	1.5	1.4		
CFSM	1.15	.52	2.48	.79	.93	1.03	3.44	1.11	1.98	2.23	.14	.17		
IN.	1.32	.58	2.85	.91	.97	1.19	3.85	1.27	2.21	2.56	.17	.19		
AC-FT	1250	555	2710	864	920	1130	3650	1210	2100	2430	158	178		
CAL YR 1982	TOTAL	8068.1	MEAN	22.1	MAX	1140	MIN	1.0	CFSM	1.24	IN	16.86	AC-FT	16000
WTR YR 1983	TOTAL	8647.8	MEAN	23.7	MAX	329	MIN	1.4	CFSM	1.33	IN	18.07	AC-FT	17150

IOWA RIVER BASIN

05449000 EAST BRANCH IOWA RIVER NEAR KLEMME, IA

49

LOCATION.--Lat 43°00'31", long 93°37'42", in NE1/4 NW1/4 sec.36, T.9S N., R.24 W., Hancock County, Hydrologic Unit 07080207, on left bank 15 ft upstream from bridge on county highway B55, 1.2 mi west of Chicago, Rock Island and Pacific Railroad crossing in Klemme, 1.5 mi upstream from Drainage ditch 9, 18.2 mi upstream from confluence with West Branch Iowa River, and at mile 341.0.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--April 1948 to September 1976, June 1977 to current year. Prior to October 1958, published as East Fork Iowa River near Klemme.

REVISED RECORDS.--WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,179.33 ft NGVD. Apr. 1, 1948, to Sept. 30, 1955, nonrecording gage at site 0.6 mi upstream at datum 0.80 ft higher. Oct. 1, 1955, to Sept. 30, 1969, at present site at datum 0.31 ft lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1948-76, 1978-83), 64.0 ft³/s, 6.53 in/yr, 46,370 acre-ft/yr; median of yearly mean discharges, 54 ft³/s, 5.5 in/yr, 39,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,960 ft³/s June 19, 1954, gage height, 11.2 ft, from flood-mark, site and datum then in use; maximum gage height, 10.67 ft Apr. 6, 1965 (corrected), backwater from ice; minimum daily discharge, 0.2 ft³/s Feb. 22-26, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1944 reached a stage of about 10 ft, from information by local residents, former site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 29	1530	708	7.66	Mar. 17	0500	714	7.68
Feb. 20	1145	873	8.14	June 30	0815	*1,960	*10.09
Mar. 7	0715	904	8.21	Sep. 20	2015	936	8.52

Minimum daily discharge, 14 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	52	90	260	36	361	452	143	134	1450	48	22
2	122	50	109	195	36	394	440	169	125	1030	46	19
3	109	46	119	150	33	402	394	211	119	814	45	18
4	85	44	114	121	32	417	337	207	107	711	43	18
5	70	43	182	119	34	438	287	183	97	615	40	19
6	64	42	365	117	34	627	276	173	94	522	38	19
7	66	43	322	102	32	886	302	166	92	438	36	17
8	63	42	245	103	32	672	278	149	87	363	34	16
9	63	50	209	104	32	504	261	145	83	299	33	16
10	63	187	204	99	32	368	276	137	74	248	31	16
11	61	241	222	60	34	289	354	126	72	213	30	15
12	56	345	210	86	37	248	371	124	72	185	29	15
13	53	303	186	88	40	242	534	121	71	163	29	14
14	50	214	158	87	50	243	605	117	174	144	28	15
15	48	168	114	80	69	301	563	110	185	129	27	24
16	43	151	104	76	120	554	573	103	140	117	27	23
17	43	132	107	63	190	696	531	103	119	107	26	39
18	42	122	108	52	300	628	471	128	197	103	25	42
19	50	130	94	52	520	538	443	307	330	101	22	149
20	168	152	91	50	860	439	417	338	348	93	21	843
21	160	141	90	50	810	352	378	264	583	86	27	886
22	120	131	92	49	730	293	333	217	544	79	24	658
23	101	116	101	46	608	264	284	178	402	83	22	455
24	88	144	169	42	481	252	247	159	293	80	22	306
25	79	117	356	38	352	242	219	141	262	74	35	213
26	72	96	385	35	269	230	200	129	225	67	37	159
27	69	89	285	37	237	189	168	125	363	64	35	131
28	66	98	392	40	292	208	155	163	1110	62	27	117
29	61	93	652	51	---	211	145	234	1090	59	23	105
30	57	87	420	48	---	216	141	178	1800	55	25	96
31	53	---	375	41	---	326	---	149	---	52	24	---
TOTAL	2366	3669	6670	2541	6332	12030	10435	5197	9392	8606	959	4485
MEAN	76.3	122	216	82.0	226	388	348	168	313	278	30.9	150
MAX	168	345	652	260	860	886	605	338	1800	1450	48	886
MIN	42	42	90	35	32	189	141	103	71	62	21	14
CFSM	.57	.92	1.62	.62	1.70	2.92	2.62	1.26	2.35	2.09	.23	1.13
IN.	.66	1.03	1.87	.71	1.77	3.36	2.92	1.45	2.63	2.41	.27	1.25
AC-FT	4690	7280	13230	5040	12660	23860	20700	10310	18630	17070	1900	8900
CAL YR 1982 TOTAL	38381.62											
MEAN 105												
MAX 862												
MIN .77												
CFSM .79												
IN 10.74												
AC-FT 76130												
WTR YR 1983 TOTAL	72682.00											
MEAN 199												
MAX 1800												
MIN 14												
CFSM 1.50												
IN 20.33												
AC-FT 144200												

IOWA RIVER BASIN

05449500 IOWA RIVER NEAR ROWAN, IA

LOCATION.--Lat 42°45'36", long 93°37'23", in NW1/4 NE1/4 sec.25, T.92 N., R.24 W., Wright County, Hydrologic Unit 07080207, on left bank 10 ft downstream from bridge on county highway C38, 0.9 mi downstream from Drainage ditch 123, 3.8 mi northwest of Rowan, 10.7 mi downstream from confluence of East and West Branches, and at mile 316.4.

DRAINAGE AREA.--429 mi².

PERIOD OF RECORD.--October 1940 to September 1976, June 1977 to current year.

REVISED RECORDS.--WSP 1308: 1942-43 (M). WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,143.35 ft NGVD. Prior to Oct. 14, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--42 years (water years 1941-76, 1978-83), 208 ft³/s, 6.58 in/yr, 150,700 acre-ft/yr; median of yearly mean discharges, 200 ft³/s, 6.3 in/yr, 145,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft³/s June 21, 1954, gage height, 14.88 ft; minimum daily, 2.9 ft³/s Jan. 21-23, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 29	1000	1,610	9.64	Apr. 15	1715	2,030	10.42
Feb. 22	0230	2,610	11.03	May 20	1630	1,240	9.38
Mar. 8	1745	2,630	11.05	June 22	1500	1,390	10.07
Mar. 19	0230	1,960	10.31	July 2	0830	*4,310	*13.15
Apr. 3	0600	1,400	9.50	Sep. 22	1000	1,920	10.72

Minimum daily discharge, 69 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	163	243	922	131	1060	1090	504	505	3700	154	87
2	294	158	249	722	132	1240	1330	535	449	4270	146	84
3	338	149	288	554	124	1360	1400	641	420	3530	139	79
4	310	140	304	471	110	1430	1300	745	398	2860	138	76
5	252	131	375	464	101	1460	1150	728	371	2410	132	76
6	215	130	725	418	97	1670	1030	662	349	2000	125	89
7	193	134	922	400	100	2140	992	688	333	1670	121	80
8	190	127	895	355	100	2550	991	678	320	1370	116	76
9	189	134	722	371	100	2500	955	612	306	1150	110	72
10	197	208	705	364	100	2140	921	554	292	950	106	72
11	202	527	601	311	105	1600	1010	515	274	786	104	72
12	185	842	570	210	110	1360	1210	486	272	656	102	71
13	170	1050	665	270	115	1080	1480	487	266	568	99	70
14	155	984	559	284	132	911	1790	482	388	500	97	69
15	148	742	458	300	183	924	2000	457	579	437	95	76
16	140	546	380	270	330	1150	1990	426	585	390	93	88
17	127	461	320	240	530	1490	1950	406	489	345	90	92
18	123	407	313	210	760	1840	1860	458	576	327	89	113
19	129	394	303	200	1180	1910	1690	918	844	322	86	268
20	234	421	275	187	1900	1740	1540	1220	986	292	83	1250
21	445	462	266	178	2490	1470	1420	1230	1200	264	87	1760
22	441	430	263	174	2570	1190	1300	1100	1370	242	91	1880
23	343	391	274	170	2390	993	1180	892	1370	227	88	1750
24	281	337	271	166	2120	856	1020	719	1260	223	85	1400
25	245	387	698	150	1820	791	872	616	1050	215	85	1040
26	222	352	999	140	1420	748	758	544	831	203	92	726
27	205	303	1070	129	1070	664	676	496	788	190	103	511
28	200	263	1170	130	940	637	601	484	1060	186	98	404
29	199	264	1380	164	---	644	554	672	1520	182	89	351
30	186	251	1000	170	---	647	517	670	2450	172	94	317
31	172	---	971	156	---	770	---	602	---	163	89	---
TOTAL	6859	11288	18234	9250	21260	40965	36576	20127	21901	30800	3225	13099
MEAN	221	376	588	298	759	1321	1219	649	730	994	104	437
MAX	445	1050	1380	922	2570	2560	2000	1230	2450	4270	154	1880
MIN	123	127	243	129	97	637	517	406	266	163	83	69
CFSM	.52	.88	1.37	.70	1.77	3.08	2.84	1.51	1.70	2.32	.24	1.02
IN.	.59	.98	1.58	.80	1.84	3.55	3.17	1.75	1.90	2.67	.28	1.14
AC-FT	13600	22390	36170	18350	42170	81250	72550	39920	43440	61090	6400	25980
CAL YR 1982	TOTAL	122325	MEAN 335	MAX 1720	MIN 20	CFSM .78	IN 10.61	AC-FT 242600				
WTR YR 1983	TOTAL	233584	MEAN 640	MAX 4270	MIN 69	CFSM 1.49	IN 20.25	AC-FT 463300				

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84 N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft downstream from bridge on State Highway 14, 1,500 ft upstream from Burnett Creek, 2.2 mi upstream from Linn Creek and at mile 222.8.

DRAINAGE AREA.--1,564 mi², including that of Burnett Creek.

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1936, 1938, 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 853.10 ft NGVD. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--65 years (water years 1903, 1915-27, 1933-83), 801 ft³/s, 6.96 in/yr, 580,300 acre-ft/yr; median of yearly mean discharges, 690 ft³/s, 6.0 in/yr, 500,000 acre-ft/yr (616 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,000 ft³/s June 4, 1918, gage height, 17.74 ft, from flood-mark, from rating curve extended above 19,000 ft³/s on basis of velocity-area study; maximum gage height, 19.77 ft March 19, 1979; minimum daily discharge, 4.7 ft³/s Jan. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximum ("):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	1315	6,100	16.28	Apr. 3	1545	5,950	16.06
Dec. 28	2145	5,470	15.83	Apr. 15	1445	6,930	16.78
Feb. 20	1530	6,730	16.65	May 20	0400	10,400	18.47
Mar. 8	0015	5,390	15.62	July 4	unknown	*10,900	*18.65

Minimum daily discharge, 308 ft³/s Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	349	1230	999	3060	695	3020	4380	2130	2640	5150	1040	405		
2	349	1400	1010	2640	675	2880	5070	2140	2590	7250	955	381		
3	349	1160	997	2380	655	2760	5820	2420	2470	9730	899	365		
4	432	1010	968	2180	635	2860	5460	2710	2260	10800	858	338		
5	561	927	1480	2010	620	3080	4900	2580	2140	10300	809	323		
6	614	864	3680	1760	630	3840	4660	2690	2010	8670	774	424		
7	590	769	3660	1630	640	5150	4500	2770	2030	7340	759	404		
8	551	796	3220	1490	640	5310	4120	2760	2000	6230	722	408		
9	576	806	2720	1420	655	5010	3870	2860	1860	5320	670	355		
10	588	898	2510	1340	658	4620	4150	2920	1840	4600	629	337		
11	588	1200	2200	1230	655	4150	4570	2730	1750	3870	600	327		
12	577	5010	1880	1170	640	3860	4640	2660	1550	3390	570	321		
13	567	4270	1720	1130	645	3520	5560	2540	1510	2840	548	309		
14	555	3100	1630	1070	690	3180	6230	2420	1490	2400	523	312		
15	532	2530	1560	1020	1660	2950	6780	2570	1780	2020	510	327		
16	508	2320	1520	972	3220	3130	6450	2560	1900	1840	487	318		
17	479	2120	1430	933	4050	3860	6040	2330	1920	1670	471	315		
18	466	1880	1370	892	5150	3660	5770	2470	2140	1530	455	308		
19	458	1690	1300	866	5970	3450	5420	5850	3140	1490	436	343		
20	525	1610	1230	883	6580	3440	5020	9610	3320	1500	416	712		
21	1070	1490	1190	930	6280	3510	4680	6970	3270	1360	391	1420		
22	1410	1390	1150	945	5740	3420	4310	7060	3050	1270	426	1540		
23	1220	1350	1160	895	5450	3180	3930	8570	2930	1220	417	1700		
24	1130	1240	1430	830	5240	2930	3570	6170	2880	1170	391	1990		
25	1030	1180	2140	745	4900	2700	3250	5180	2840	1120	372	2170		
26	925	1110	2400	620	4220	2530	3040	4530	2760	1060	370	2150		
27	845	1030	2390	611	3770	2330	2800	3890	2780	1020	406	1930		
28	837	1070	4520	655	3290	2300	2580	3460	3490	988	415	1630		
29	1060	1080	5130	690	---	2260	2340	3470	3060	1380	408	1340		
30	1190	1030	4170	710	---	2190	2250	3020	4430	1450	430	1070		
31	1050	---	3530	720	---	2750	---	2720	---	1180	450	---		
TOTAL	21981	47560	66294	38437	74653	103830	136200	116760	73830	111158	17607	24272		
MEAN	709	1585	2139	1240	2666	3349	4540	3766	2461	3586	568	809		
MAX	1410	5010	5130	3060	6580	5310	6780	9610	4430	10800	1040	2170		
MIN	349	769	968	611	620	2190	2250	2130	1490	988	370	308		
CFSM	.45	1.01	1.37	.79	1.71	2.14	2.90	2.41	1.57	2.29	.36	.52		
IN.	.52	1.13	1.58	.91	1.78	2.47	3.24	2.78	1.76	2.64	.42	.58		
AC-FT	43600	94340	131500	76240	148100	205900	270200	231600	146400	220500	34920	48140		
CAL YR 1982	TOTAL	573913	MEAN	1572	MAX	7920	MIN	64	CFSM	1.01	IN	13.65	AC-FT	1138000
WTR YR 1983	TOTAL	832582	MEAN	2281	MAX	10800	MIN	308	CFSM	1.46	IN	19.80	AC-FT	1651000

IOWA RIVER BASIN

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'25", long 92°51'15", in SE1/4 SW1/4 sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft downstream from bridge on U.S. Highway 30, 3.5 mi upstream from mouth, and 4.1 mi southeast of court house in Marshalltown.

DRAINAGE AREA.--118 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1957-59.

GAGE.--Water-stage recorder. Datum of gage is 849.44 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--34 years, 70.6 ft³/s, 8.12 in/yr, 51,150 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Aug. 16, 1977, gage height, 17.69 ft; no flow for a few days in 1956 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft, discharge, 5,700 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 19	0145	1,280	10.79	May 19	unknown	*3,570	*14.79
Apr. 14	1545	1,240	10.61	July 3	unknown	1,980	12.65

Minimum daily discharge, 14 ft³/s Oct. 1-3, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	87	52	160	62	97	404	158	167	217	61	25
2	14	133	51	142	60	95	569	172	159	559	57	22
3	14	69	49	131	61	94	590	215	152	1480	54	21
4	15	55	45	125	62	93	418	202	147	1220	52	18
5	14	49	295	118	70	98	351	179	134	511	50	18
6	20	44	324	116	75	189	358	175	127	409	49	85
7	23	41	216	110	66	275	314	185	122	342	47	37
8	17	38	175	103	65	211	276	181	114	284	44	27
9	62	38	147	100	63	169	268	169	110	243	46	24
10	33	37	141	97	61	146	281	159	130	210	40	23
11	22	174	113	95	58	129	292	150	105	189	37	24
12	20	346	110	92	57	122	374	154	119	172	37	21
13	21	169	106	88	60	119	569	148	103	159	36	20
14	18	130	98	82	79	115	858	144	110	144	34	19
15	17	105	91	72	139	116	597	140	100	139	32	31
16	16	96	83	88	261	126	473	126	93	142	30	41
17	17	89	81	81	360	115	402	124	89	127	28	29
18	18	79	82	77	448	111	368	201	110	119	27	25
19	17	77	76	79	732	106	325	1520	101	121	25	154
20	28	71	72	76	459	104	292	495	92	124	23	324
21	30	63	69	74	270	102	268	383	91	126	23	144
22	23	62	70	72	208	96	249	640	83	128	29	96
23	21	60	71	70	170	94	230	420	78	127	26	79
24	20	59	104	67	148	95	213	333	76	97	25	69
25	19	58	102	64	123	93	202	315	74	86	22	61
26	20	52	85	60	108	95	193	254	75	83	23	55
27	18	48	100	68	100	83	179	230	176	80	61	51
28	25	57	506	60	98	111	173	216	313	77	33	47
29	56	56	263	72	---	110	165	209	204	79	24	44
30	37	53	211	68	---	136	160	189	301	75	40	42
31	31	---	181	64	---	324	---	180	---	67	35	---
TOTAL	720	2495	4169	2761	4524	3970	10411	8368	3855	7936	1140	1676
MEAN	23.2	83.2	134	89.1	162	128	347	270	129	256	36.8	55.9
MAX	62	346	506	160	732	324	858	1520	313	1480	61	324
MIN	14	37	45	68	57	83	160	124	74	67	22	18
CFSM	.20	.71	1.14	.76	1.37	1.09	2.94	2.29	1.09	2.17	.31	.47
IN.	.23	.79	1.31	.87	1.43	1.25	3.28	2.64	1.22	2.50	.36	.53
AC-FT	1430	4950	8270	5480	8970	7870	20650	16600	7650	15740	2260	3320
CAL YR 1982 TOTAL	51520.5		MEAN 141	MAX 5300	MIN 8.0	CFSM 1.20	IN 16.24	AC-FT 102200				
WTR YR 1983 TOTAL	52025.0		MEAN 143	MAX 1520	MIN 14	CFSM 1.21	IN 16.40	AC-FT 103200				

05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE1/4 NE1/4 sec.21, T.82 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft upstream from bridge on county highway, 0.6 mi northeast of Haven, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--56.1 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage recorder. Datum of gage is 788.69 ft NGVD. Prior to Oct. 1, 1971, at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, and for June and July which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--34 years, 35.6 ft³/s, 8.62 in/yr, 25,790 acre-ft/yr; median of yearly mean discharges, 31 ft³/s, 7.5 in/yr, 22,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s May 28, 1974, gage height, 24.00 ft; no flow Jan. 22 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 1	0530	1,250	17.43	May 28	0300	2,690	20.46
Nov. 12	0045	1,140	17.04	July 2	unknown	*3,400	*21.38

Minimum daily discharge, 8.0 ft³/s Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.4	566	49	82	29	44	186	68	63	816	25	11		
2	8.2	349	50	76	28	44	457	78	59	2420	24	10		
3	8.0	96	49	72	27	44	296	114	58	610	23	10		
4	8.2	73	49	70	26	43	187	91	54	311	22	10		
5	8.4	63	308	67	25	47	156	79	52	222	21	9.5		
6	15	58	187	67	26	147	160	76	51	168	20	18		
7	20	55	124	63	25	153	133	85	48	132	19	11		
8	15	51	99	61	26	98	119	72	42	114	18	9.6		
9	193	50	86	62	27	75	184	68	42	100	17	8.8		
10	47	48	81	62	27	66	259	65	39	90	15	8.8		
11	34	286	75	60	26	60	228	62	38	79	15	9.8		
12	30	424	71	59	27	58	265	67	38	72	15	9.0		
13	27	124	67	58	29	57	285	62	36	67	15	8.6		
14	25	98	64	55	44	54	513	60	34	63	14	8.6		
15	23	83	60	57	120	64	246	58	35	59	13	11		
16	21	78	57	57	280	67	183	54	36	55	12	12		
17	21	71	57	56	200	62	152	53	34	51	11	9.7		
18	21	68	57	54	172	61	134	63	34	49	11	8.6		
19	21	67	54	50	153	55	121	131	32	55	10	35		
20	30	63	52	45	116	55	112	92	32	49	9.7	113		
21	28	57	51	41	78	56	105	82	32	44	9.8	36		
22	25	56	51	39	66	53	100	83	30	41	11	26		
23	24	54	51	36	59	49	95	71	28	39	12	22		
24	23	51	56	34	56	49	87	66	26	38	12	20		
25	22	50	57	30	50	47	85	63	26	37	11	17		
26	21	49	52	31	47	47	83	59	24	35	10	16		
27	21	47	65	32	46	49	77	57	28	35	17	15		
28	24	55	278	33	45	49	75	611	89	34	12	15		
29	34	52	116	32	---	58	71	95	63	30	10	14		
30	29	50	97	31	---	94	69	76	114	29	14	13		
31	27	---	89	30	---	182	---	68	---	27	13	---		
TOTAL	862.2	3292	2659	1502	1880	2087	5223	2829	1317	5971	462.5	526.0		
MEAN	27.8	110	85.8	51.7	67.1	67.3	174	91.3	43.9	193	14.9	17.5		
MAX	193	566	308	82	280	182	513	611	114	2420	25	113		
MIN	8.0	47	49	30	25	43	69	53	24	27	9.7	8.6		
CFSM	.50	1.96	1.53	.92	1.20	1.20	3.10	1.63	.78	3.44	.27	.31		
IN.	.57	2.18	1.76	1.06	1.25	1.38	3.46	1.88	.87	3.96	.31	.35		
AC-FT	1710	6530	5270	3180	3730	4140	10360	5610	2610	11840	917	1040		
CAL YR 1982	TOTAL	28738.8	MEAN	78.7	MAX	1680	MIN	6.0	CFSM	1.40	IN	19.06	AC-FT	57000
WTR YR 1983	TOTAL	28710.7	MEAN	78.7	MAX	2420	MIN	8.0	CFSM	1.40	IN	19.04	AC-FT	56950

IOWA RIVER BASIN

08452000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW1/4 NW1/4 sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, near center of span on downstream side of bridge on U.S. Highway 30, 2.0 mi upstream from Hog Run, 3.0 mi south of Elberon, and 9.0 mi upstream from mouth.

DRAINAGE AREA.--201 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage recorder. Datum of gage is 781.58 ft NGVD (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945, and June 14, 1947, to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Records good except those for winter period, which are fair, and for September, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--38 years, 131 ft³/s, 8.85 in/yr, 94,910 acre-ft/yr; median of yearly mean discharges, 110 ft³/s, 7.4 in/yr, 79,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,000 ft³/s June 13, 1947, gage height, 17.6 ft from rating curve extended above 17,000 ft³/s; maximum gage height, 20.00 ft June 15, 1982; minimum daily discharge, 0.85 ft³/s Jan. 31, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1944, reached a stage of 19.9 ft, from floodmark at downstream side of bridge, discharge, about 30,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0730	2,330	15.04	Apr. 3	0230	2,130	14.74
Nov. 12	1500	2,660	15.33	Apr. 14	1915	2,010	14.59
Dec. 28	1000	1,940	14.52	July 3	0500	*4,180	*16.34
Feb. 19	0430	2,010	14.50				

Minimum daily discharge, 14 ft³/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	1490	169	296	98	179	625	233	212	1560	81	23
2	38	1700	167	261	82	178	1590	290	206	2710	76	21
3	39	395	167	239	60	184	1800	393	203	3380	73	19
4	38	266	155	229	81	185	828	366	192	2240	70	16
5	38	212	625	217	114	197	619	310	187	732	68	14
6	42	182	861	214	117	430	610	295	185	520	67	45
7	46	165	505	200	117	613	505	326	177	432	65	38
8	40	147	387	183	110	392	434	288	171	375	63	29
9	620	178	322	184	106	293	580	274	173	332	61	31
10	147	192	290	195	101	251	864	263	164	297	59	32
11	86	757	255	165	99	229	1010	254	157	270	57	32
12	71	2470	245	126	95	219	823	267	160	246	55	32
13	64	785	235	180	100	216	1230	263	151	230	53	31
14	61	435	221	162	160	211	1680	254	145	215	51	32
15	59	341	204	114	230	232	1120	243	140	201	50	49
16	54	306	190	145	350	304	660	232	134	187	48	44
17	52	270	184	150	600	261	534	226	131	173	46	35
18	51	249	191	136	884	241	465	249	137	164	44	34
19	51	247	175	136	1460	222	415	473	164	166	42	35
20	71	235	164	122	991	214	377	386	143	153	40	92
21	65	206	155	119	409	205	352	337	138	139	38	65
22	57	196	156	117	328	188	332	330	128	129	37	44
23	54	186	161	116	271	182	312	292	123	127	35	42
24	51	159	200	110	247	182	288	273	119	121	33	40
25	49	162	230	104	208	212	276	261	116	118	31	39
26	47	158	200	98	184	182	270	246	113	109	29	38
27	47	144	220	95	174	182	251	244	207	101	27	37
28	54	178	1460	103	179	195	241	272	203	97	26	37
29	99	173	528	108	---	197	235	255	805	93	25	36
30	77	160	384	107	---	263	231	238	2530	91	24	35
31	65	---	339	101	---	543	---	226	---	85	24	---
TOTAL	2372	12745	9735	4832	7955	7782	19557	8858	7814	15793	1498	1097
MEAN	76.5	425	314	156	284	251	652	286	260	509	48.3	36.6
MAX	620	2470	1460	296	1460	613	1800	473	2530	3380	81	92
MIN	38	144	155	95	60	178	231	226	113	85	24	14
CFSM	.38	2.11	1.56	.78	1.41	1.25	3.24	1.42	1.29	2.53	.24	.18
IN.	.44	2.36	1.80	.89	1.47	1.44	3.62	1.64	1.45	2.92	.28	.20
AC-FT	4700	25280	19310	9580	15780	15440	38790	17570	15500	31330	2970	2180

CAL YR 1982	TOTAL	129291	MEAN	354	MAX	11900	MIN	30	CFSM	1.76	IN	23.93	AC-FT	256400
WTR YR 1983	TOTAL	100038	MEAN	274	MAX	3380	MIN	14	CFSM	1.36	IN	18.61	AC-FT	198400

05452200 WALNUT CREEK NEAR HARTWICK, IA

LOCATION.--Lat 41°50'06", Long 92°23'10", in SE1/4 SW1/4 sec.8, T.81 N, R.13 W., Poweshiek County, Hydrologic Unit 07080208, on left bank 5 ft upstream from bridge on county highway V21, 1.2 mi downstream from North Walnut Creek, 4.0 mi northwest of Hartwick, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--70.9 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1558: 1950 (P), 1951-57.

GAGE.--Water-stage recorder. Datum of gage is 786.59 ft NGVD.

REMARKS.--Records are fair. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--34 years, 44.0 ft³/s, 8.43 in/yr, 31,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,100 ft³/s July 2, 1983, gage height, 16.65 ft, from rating curve extended above 2,500 ft³/s on basis of contracted-opening and flow-over-embankment measurement of peak flow; no flow at times for most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 17.7 ft, from information by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	0500	1,310	11.60	June 29	1730	4,120	15.37
May 28	0300	1,410	11.88	July 2	unknown	*7,100	*16.65

Minimum daily discharge, 6.2 ft³/s Sept. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.4	277	54	95	26	53	242	90	90	1480	25	7.8		
2	7.1	209	59	84	25	53	620	118	81	4840	24	7.2		
3	6.8	122	56	76	24	53	419	178	75	967	22	6.7		
4	6.8	92	54	72	24	53	289	148	68	834	21	6.2		
5	6.5	75	377	68	26	61	244	126	63	299	19	13		
6	6.5	67	269	64	29	193	247	120	61	224	19	16		
7	10	62	199	59	29	218	208	127	57	181	17	9.4		
8	15	54	160	67	30	150	185	103	54	155	15	7.7		
9	367	51	135	53	30	113	271	98	52	136	13	7.4		
10	74	49	119	50	31	95	356	92	51	127	14	9.0		
11	46	208	104	48	32	85	321	88	48	112	12	22		
12	35	374	95	46	32	81	344	92	49	102	12	42		
13	30	185	90	44	33	79	386	87	45	93	11	24		
14	26	147	85	43	45	75	502	83	43	84	11	7.8		
15	23	119	77	42	120	77	307	78	41	77	11	7.8		
16	20	107	70	40	280	77	244	73	39	72	10	8.3		
17	19	93	67	39	225	73	212	69	38	70	9.4	6.8		
18	18	85	64	38	210	70	189	82	41	58	8.7	6.8		
19	17	84	60	36	200	65	170	145	42	69	8.2	84		
20	26	78	57	35	169	64	156	111	39	56	7.7	119		
21	23	67	55	36	121	61	145	100	37	51	7.5	40		
22	21	64	56	36	98	57	135	98	35	47	9.4	22		
23	20	60	57	34	82	57	124	84	34	44	8.2	17		
24	18	54	64	33	74	32	113	79	32	43	9.6	12		
25	18	53	62	31	64	56	108	75	31	42	8.4	11		
26	17	51	52	30	57	59	104	69	34	38	7.8	12		
27	17	47	74	31	56	65	92	67	46	37	14	10		
28	23	63	310	30	54	64	89	457	103	34	9.7	8.3		
29	38	59	157	29	---	78	88	155	1110	31	7.7	8.6		
30	30	55	127	28	---	152	84	120	288	31	12	8.3		
31	26	---	110	27	---	249	---	102	---	28	9.3	---		
TOTAL	1018.1	3111	3375	1434	2225	2718	6994	3514	2827	10462	393.6	568.1		
MEAN	32.8	104	109	46.3	79.5	87.7	233	113	94.2	337	12.7	18.9		
MAX	367	374	377	96	280	249	620	457	1110	4840	25	119		
MIN	6.5	47	52	27	24	32	84	67	31	28	7.5	6.2		
CFSM	.46	1.47	1.54	.65	1.12	1.24	3.29	1.59	1.33	4.75	.18	.27		
IN.	.53	1.63	1.77	.75	1.17	1.43	3.67	1.84	1.48	5.49	.21	.30		
AC-FT	2020	6170	6690	2840	4410	5390	13870	6970	5610	20750	781	1130		
CAL YR 1982	TOTAL	30654.4	MEAN	84.0	MAX	1220	MIN	6.5	CFSM	1.19	IN	16.08	AC-FT	60800
WTR YR 1983	TOTAL	38639.8	MEAN	106	MAX	4840	MIN	6.2	CFSM	1.50	IN	20.27	AC-FT	76640

IOWA RIVER BASIN

05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in SW1/4 SW1/4 sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft downstream from bridge on county highway V52, 0.4 mi south of Ladora, 1.2 mi downstream from Coats Creek, 2.8 mi upstream from Little Bear Creek, and 8.1 mi upstream from mouth.

DRAINAGE AREA.--189 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1956, published as Bear Creek at Ladora.

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 744.94 ft NGVD; Oct. 1945 to June 25, 1945, non-recording gage and June 27, 1945 to Sept. 30, 1980, water stage recorder at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--38 years, 121 ft³/s, 8.69 in/yr, 87,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s Mar. 30, 1960, gage height, 14.60 ft, datum then in use; maximum gage height, 15.32 ft, datum then in use, Sept. 18, 1977; no flow for several days in 1956 and 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	1015	2,540	20.01	June 30	0100	3,370	21.47
Nov. 12	0245	3,020	20.87	July 1	1400	3,150	21.10
Dec. 5	1515	2,080	19.03	July 3	0315	*5,260	*23.76
Apr. 2	1615	2,940	20.74	July 4	1000	2,430	19.80

Minimum daily discharge, 14 ft³/s Sept. 13-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	489	160	254	73	141	624	226	187	1480	69	22
2	24	712	191	231	72	136	1920	339	177	3180	64	19
3	24	359	189	214	71	135	1300	331	159	2650	60	18
4	24	270	175	205	71	134	755	328	157	1620	57	17
5	25	222	1040	195	72	142	599	279	146	699	55	16
6	33	192	867	192	74	304	585	266	142	533	53	31
7	66	177	531	182	78	484	504	305	133	445	49	29
8	64	162	408	168	80	349	441	266	127	385	46	18
9	1180	154	345	160	82	269	590	247	119	343	43	15
10	319	147	320	156	86	227	843	234	121	309	40	15
11	184	404	275	150	88	207	770	225	111	279	37	20
12	137	1620	250	140	90	196	705	228	108	252	36	17
13	113	515	238	135	95	190	1090	218	106	232	35	14
14	99	395	223	124	120	186	1150	209	102	215	33	14
15	88	356	205	119	270	178	803	198	100	199	31	19
16	74	307	192	114	700	187	585	188	95	184	29	25
17	69	269	184	110	590	173	486	181	96	169	27	19
18	64	243	188	104	418	169	434	192	109	156	25	16
19	63	228	175	100	581	169	394	294	129	156	23	188
20	79	220	164	97	480	155	380	254	106	145	23	255
21	93	198	167	94	301	152	357	238	100	128	22	167
22	78	178	155	91	245	141	335	240	94	115	24	84
23	72	172	168	89	210	139	314	214	90	108	26	63
24	68	151	168	88	192	139	290	200	88	103	26	52
25	65	149	177	86	169	139	275	195	85	101	26	48
26	62	147	162	85	163	144	265	183	84	93	25	43
27	60	137	150	83	146	154	253	177	98	87	26	41
28	65	176	578	81	142	163	237	609	301	82	32	38
29	130	183	402	78	---	177	228	257	904	78	23	35
30	109	167	319	75	---	273	219	218	1070	77	27	33
31	95	---	282	75	---	548	---	201	---	74	40	---
TOTAL	3651	9099	9128	4076	5749	6290	17733	7740	5455	14579	1132	1392
MEAN	118	303	294	131	205	203	591	250	182	474	35.5	45.4
MAX	1180	1620	1040	254	700	548	1920	609	1070	3180	69	255
MIN	24	137	152	75	71	134	219	177	84	74	22	14
CFSM	.62	1.60	1.56	.69	1.09	1.07	3.13	1.32	.96	2.51	.19	.25
IN.	.72	1.79	1.80	.80	1.13	1.24	3.49	1.52	1.07	2.89	.22	.27
AC-FT	7240	18050	18110	8080	11400	12480	35170	15350	10820	29120	2250	2750
CAL YR 1982	TOTAL	83325	MEAN 228	MAX 4480	MIN 24	CFSM 1.21	IN 15.40	AC-FT 165300				
WTR YR 1983	TOTAL	86124	MEAN 235	MAX 3180	MIN 14	CFSM 1.25	IN 16.95	AC-FT 170800				

IOWA RIVER BASIN

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.-- Lat 41°48'48" long 92°03'51", in SE1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 5 ft upstream from bridge on State Highway 411, 1.0 mi downstream from Big Bear Creek, 0.8 mi north of Marengo, 4.6 mi upstream from Hilton Creek, and at mile 139.1.

DRAINAGE AREA.--2,794 mi².

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1558: 1957.

GAGE.--Water-stage recorder. Datum of gage is 720.52 ft. NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--27 years, 1,794 ft³/s, 8.72 in/yr, 1,300,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,800 ft³/s Mar. 31, 1960, gage height, 19.21 ft; maximum gage height, 19.79 ft July 12, 1969; minimum daily discharge, 24 ft³/s Jan. 29 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	0800	8,160	14.98	Apr. 18	1015	13,200	16.63
Feb. 24	0345	10,400	15.86	May 26	1615	13,200	16.64
Mar. 13	1345	6,690	14.22	July 3	1300	*21,600	*18.19

Minimum daily discharge, 475 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	578	2940	2190	5730	1400	7070	5090	3980	6330	9580	1900	727	
2	563	5020	2230	5890	1350	6150	7680	4230	5090	14000	1720	716	
3	555	4430	2210	5590	1240	4980	10200	4370	4420	20300	1580	653	
4	543	3240	2140	4710	1200	4360	9940	4710	4050	20400	1480	608	
5	547	2530	3490	3980	1150	4140	9270	4740	3710	20900	1410	571	
6	609	2300	5550	3640	1100	4560	9440	4780	3450	19700	1340	658	
7	824	2110	5440	3390	1120	5450	10300	4820	3240	18800	1270	759	
8	996	1940	5540	3100	1120	5780	9600	4760	3060	18000	1210	821	
9	2960	1530	5530	2950	1120	5880	9240	4700	2910	16800	1170	723	
10	2390	1810	5310	2870	1110	5920	9780	4740	2810	15300	1100	693	
11	1590	2100	4700	2770	1130	6060	9850	4780	2700	13500	1030	615	
12	1340	7420	4150	2580	1130	6350	9270	4850	2600	11400	972	544	
13	1220	6220	3890	2450	1140	6640	10100	4770	2610	9620	929	506	
14	1150	6330	3530	2360	1340	6430	10500	4460	2480	8360	899	475	
15	1100	6120	3180	2210	2150	5810	10800	4160	2390	6850	863	482	
16	1040	5830	2970	2150	4450	5090	11100	3970	2400	4980	837	520	
17	993	4910	2800	2200	5000	4660	11700	3880	2580	4040	807	579	
18	956	4160	2760	2040	5400	4540	11800	3800	2660	3460	772	575	
19	923	3750	2660	2000	7160	4540	11300	4230	2820	3130	738	685	
20	935	3430	2550	1930	9710	4670	10300	4710	3240	3020	715	1000	
21	1000	3090	2480	1900	8490	4570	9470	5040	3730	3000	688	1450	
22	1080	2890	2410	1840	8020	4440	8850	5580	3860	2610	688	1740	
23	1450	2720	2370	1800	9400	4380	8250	8740	3830	2360	666	1940	
24	1720	2540	2400	1700	10300	4300	7620	11500	3700	2220	660	2010	
25	1660	2420	2550	1600	9570	4120	7080	10800	3590	2110	550	2140	
26	1590	2330	2890	1500	8740	3870	6560	11500	3520	1990	642	2330	
27	1510	2230	3210	1400	8100	3740	5970	11100	3530	1850	628	2440	
28	1430	2200	4780	1340	7590	3540	5300	10300	5180	1710	683	2390	
29	1490	2270	5580	1310	---	3380	4710	9220	5460	1620	722	2200	
30	1600	2230	5550	1400	---	3630	4290	8720	7790	1600	712	1950	
31	1740	---	5590	1450	---	4330	---	7800	---	1980	732	---	
TOTAL	38062	103440	112630	81880	120730	153480	265360	189740	109740	265190	30213	33500	
MEAN	1228	3448	3633	2641	4312	4951	8845	6121	3658	8555	975	1117	
MAX	2960	7420	5590	5890	10300	7070	11800	11500	7790	20900	1900	2440	
MIN	543	1810	2140	1310	1100	3380	4290	3800	2390	1600	628	475	
CFSM	.44	1.23	1.30	.95	1.54	1.77	3.17	2.19	1.31	3.06	.35	.40	
IN.	.51	1.38	1.50	1.09	1.61	2.04	3.53	2.53	1.46	3.53	.40	.45	
AC-FT	75500	205200	223400	162400	239500	304400	526300	376300	217700	526000	59930	66450	
CAL YR 1982 TOTAL	1187794	MEAN	3254	MAX	19200	MIN	320	CFSM	1.17	IN	15.81	AC-FT	2356000
WTR YR 1983 TOTAL	1503965	MEAN	4120	MAX	20900	MIN	475	CFSM	1.48	IN	20.02	AC-FT	2983000

IOWA RIVER BASIN

05453510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi upstream from Rapid Creek, 4.3 mi northeast of Coralville Post Office and at mile 83.3.

DRAINAGE AREA.--3,115 mi².

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1957. Storage began in September 1958. Releases controlled by three gates, 8.33 ft wide and 20 ft high, into forechamber of 23-ft diameter concrete conduit through dam. Inlet invert elevation at 546.0 ft. No dead storage. Maximum design discharge through gates is 20,000 ft³/s. Ungated spillway is concrete overflow section 500 ft in length at elevation 712 ft NGVD, contents, 469,000 acre-ft, surface area, 24,800 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 670 ft Feb. 15 to June 15, surface area, 1,820 acres, 680 ft June 15 to Sept. 25, surface area, 4,900 acres, 683 ft Sep. 25 to Dec. 15, and 690 ft December 15 to Feb. 1 with a minimum release of 150 ft/s and maximum release of 10,000 ft/s Dec. 15 to May 1 and 6,000 ft³/s May 1 to Dec. 15.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 472,000 acre-ft July 21, 1969, elevation, 711.85 ft; minimum daily contents, 456 acre-ft Jan. 15, 1975; minimum elevation, 658.77 ft Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 288,000 acre-ft July 15; maximum elevation, 702.51 ft July 15; minimum daily contents, 38,200 acre-ft Mar. 10; minimum elevation, 675.36 ft Mar. 6.

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	INSTANTANEOUS OBSERVATIONS AT 2400											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76100	78200	89100	66900	58700	50700	63100	191000	231000	87300	152000	56500
2	76200	79000	90600	67300	58000	47900	66300	189000	232000	93900	143000	56200
3	76300	79600	95600	67000	55800	46700	76500	188000	231000	103000	134000	55800
4	76400	79400	104000	66400	55000	44000	98700	185000	228000	126000	124000	56000
5	76400	78000	113000	65700	54500	39500	115000	183000	224000	154000	115000	56700
6	77000	77400	122000	60800	55300	39600	130000	181000	219000	177000	105000	66800
7	77700	76800	133000	59500	56100	39600	137000	179000	213000	200000	95200	57200
8	77800	75800	147000	58800	57000	39300	139000	176000	208000	219000	85400	67500
9	79600	75400	158000	58700	58100	38700	145000	174000	202000	235000	76000	57700
10	82000	75700	163000	58700	58000	38200	153000	172000	195000	251000	68000	57800
11	79500	77200	166000	58400	57300	38300	161000	170000	188000	265000	62100	57300
12	78100	85400	165000	59500	56900	38600	167000	169000	180000	275000	60300	57000
13	58000	95700	163000	60000	56600	41800	172000	168000	172000	281000	59400	57100
14	77600	105000	160000	59000	56400	49800	178000	167000	165000	286000	58400	57300
15	77600	111000	155000	57600	54900	62600	183000	165000	167000	288000	57300	57300
16	77300	115000	147000	56800	52900	75700	188000	162000	149000	287000	56500	57000
17	77000	118000	140000	56900	51500	86100	193000	159000	141000	283000	56100	56700
18	76800	120000	133000	56900	50900	97400	200000	156000	133000	277000	56000	56700
19	77400	121000	126000	57300	52500	106000	206000	154000	125000	259000	56100	57000
20	76600	121000	118000	57300	53700	114000	217000	153000	118000	261000	56200	57600
21	76200	120000	111000	57100	55700	121000	229000	153000	113000	253000	56000	58000
22	76300	118000	102000	56700	56600	127000	235000	153000	108000	244000	55800	58200
23	76700	116000	93900	56500	55500	129000	237000	153000	103000	235000	55900	58200
24	76700	113000	84900	56600	53900	122000	236000	155000	97800	226000	56100	58400
25	76900	109000	76100	56700	53600	114000	234000	162000	92200	217000	56200	58400
26	76800	106000	74900	56000	54700	104000	230000	174000	86300	208000	56400	58200
27	76800	102000	76500	55700	55000	96500	223000	191000	83300	199000	56600	58000
28	76800	98800	73400	56700	53400	86700	217000	206000	85400	189000	56400	57800
29	76300	96200	69000	57100	---	76500	208000	216000	85500	180000	56100	57600
30	75900	91500	66000	57500	---	69800	198000	222000	84400	170000	56200	57300
31	75800	---	66000	57700	---	65800	---	227000	---	161000	56500	---
MAX	82000	121000	166000	67300	58700	129000	237000	227000	232000	288000	152000	58400
MIN	58000	75400	66000	55700	50900	38200	63100	153000	83300	87300	55800	55800

WTR YR 1983 MAX 288000 MIN 38200

05454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°41'19", long 91°29'15", in NE1/4 NE1/4 sec.36, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft upstream from bridge on State Highway 1, 3.5 mi northeast of Iowa City, and 4.7 mi upstream from mouth.

DRAINAGE AREA.--25.3 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M), 1946. WSP 1708: 1951 (P), 1952. WDR IOWA 1967: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years, 15.8 ft³/s, 8.48 in/yr, 11,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s May 23, 1965, gage height, 14.10 ft, from contracted-opening measurement of peak flow; maximum gage height, 14.93 ft July 17, 1972; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 2	0230	1,830	11.38	June 28	0250	*2,290	*12.07
Dec. 5	1800	776	9.02				

Minimum daily discharge, 0.07 ft³/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4.0	18	14	23	8.6	19	54	25	13	260	2.7	.44		
2	4.0	18	506	21	9.4	18	319	31	13	80	2.4	.23		
3	3.8	15	93	21	9.0	18	121	29	12	45	2.1	.16		
4	3.7	13	82	19	8.0	17	82	24	12	59	1.5	.12		
5	3.7	12	460	18	7.3	18	74	22	11	38	1.0	.07		
6	3.6	11	156	18	7.0	31	73	22	11	30	.86	6.9		
7	3.7	11	80	17	6.6	29	59	23	10	25	.79	1.7		
8	4.0	9.6	58	17	7.2	25	52	20	9.4	22	.68	.48		
9	11	9.4	46	16	9.0	22	77	19	9.3	19	.56	.24		
10	6.4	8.7	43	15	9.4	21	74	18	25	17	1.1	.16		
11	5.3	23	36	14	8.7	19	58	18	8.3	16	3.0	.16		
12	4.8	62	33	13	8.5	18	52	19	7.9	14	.62	.56		
13	4.8	30	30	14	8.9	18	51	19	7.6	13	.51	.26		
14	4.5	25	29	13	11	17	54	18	7.2	12	.49	.18		
15	4.2	21	27	12	16	16	45	17	7.3	11	.44	.41		
16	3.7	19	25	11	117	15	42	16	6.8	10	.38	.98		
17	3.7	17	24	10	93	15	39	15	6.7	9.6	.30	.67		
18	3.7	15	24	9.2	107	15	36	17	7.6	9.4	.21	.53		
19	5.3	15	22	10	194	14	33	26	7.8	9.2	.12	1.7		
20	6.1	14	21	11	80	14	31	20	6.8	8.5	.11	4.9		
21	5.2	12	19	11	54	14	30	24	6.4	7.3	.16	2.5		
22	4.8	12	19	11	45	13	28	25	5.7	6.5	.21	.89		
23	4.7	12	19	11	37	13	26	22	5.4	6.0	.26	.53		
24	4.9	10	20	11	32	13	24	20	6.2	6.0	.32	.41		
25	4.7	10	21	11	27	13	24	19	4.9	5.9	.40	.36		
26	4.7	10	18	9.6	23	14	23	17	4.8	5.1	.34	.34		
27	4.5	9.4	21	9.0	22	22	21	16	6.4	4.5	.41	.41		
28	5.0	16	40	10	20	24	20	16	564	4.1	.45	.34		
29	11	15	29	11	---	32	20	16	56	3.6	.39	.26		
30	8.6	14	25	10	---	44	19	15	46	3.7	1.2	.20		
31	8.0	---	24	9.0	---	48	---	15	---	3.3	.87	---		
TOTAL	161.1	487.1	2064	415.8	986.6	629	1661	623	904.5	763.7	24.88	27.09		
MEAN	5.20	16.2	66.6	13.4	35.2	20.3	55.4	20.1	30.2	24.6	.80	.90		
MAX	11	62	506	23	194	48	319	31	564	260	3.0	5.9		
MIN	3.6	8.7	14	9.0	6.6	13	19	15	4.8	3.3	.11	.07		
CFSM	.21	.64	2.63	.53	1.39	.80	2.19	.79	1.19	.97	.03	.04		
IN	.24	.72	3.03	.61	1.45	.92	2.44	.92	1.33	1.12	.04	.04		
AC-FT	320	966	4090	825	1950	1250	3290	1240	1790	1510	49	54		
CAL YR 1982	TOTAL	10806.80	MEAN	29.6	MAX	1090	MIN	3.6	CFSM	1.17	IN	15.89	AC-FT	21440
WTR YR 1983	TOTAL	8746.77	MEAN	24.0	MAX	564	MIN	.07	CFSM	.95	IN	12.86	AC-FT	17350

IOWA RIVER BASIN

05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'36", long 91°35'55", in NE1/4 SE1/4 sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 50 ft upstream from bridge on county highway, 1.1 mi west of post office in Coralville, 1.5 mi downstream from Deer Creek and 2.7 mi upstream from mouth.

DRAINAGE AREA.--98.1 mi².

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 547.48 ft NGVD (levels by Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years, 66.1 ft³/s, 9.15 in/yr, 47,890 acre-ft/yr; median of yearly mean discharges, 50 ft³/s 6.9 in/yr, 36,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,000 ft³/s June 15, 1982, gage height, 14.61 ft; no flow Jan. 18 to Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 5	2015	1,050	9.17	June 29	2000	1,050	9.10
Apr. 2	1345	1,130	9.15	July 2	1445	1,120	9.37
June 28	1215	*1,940	*11.87				

Minimum daily discharge, 4.3 ft³/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	287	52	93	33	73	227	90	67	410	19	5.7
2	33	222	354	86	33	70	840	125	64	660	19	5.0
3	33	112	208	80	33	67	578	120	63	250	17	4.9
4	31	84	167	83	33	65	362	134	59	330	15	4.6
5	29	70	633	77	33	67	302	113	55	190	15	4.3
6	30	50	567	76	33	124	308	106	55	150	13	16
7	34	54	276	72	34	128	257	102	52	130	12	13
8	35	48	208	66	36	103	222	92	49	110	11	6.8
9	325	46	180	64	38	90	283	84	47	95	11	5.7
10	148	55	160	73	42	82	401	80	46	85	10	4.6
11	88	127	137	66	52	76	336	76	43	76	12	5.9
12	72	500	122	51	61	73	270	84	41	68	9.1	6.3
13	63	188	109	66	77	71	327	115	39	62	8.6	6.0
14	55	143	102	62	105	69	361	113	38	58	8.3	5.1
15	50	114	94	55	131	65	277	96	37	54	7.8	6.3
16	46	103	87	52	504	64	231	87	35	50	7.0	10
17	41	91	82	50	485	63	207	81	34	45	6.6	7.1
18	39	82	83	48	379	61	191	88	34	44	5.9	6.2
19	39	78	81	47	383	59	172	183	39	41	6.5	8.4
20	48	72	75	45	257	58	156	146	33	40	5.1	24
21	45	63	72	44	167	60	145	129	33	36	5.0	19
22	37	59	70	43	141	57	134	124	31	32	6.5	8.5
23	33	58	72	42	121	55	125	104	29	31	6.6	6.7
24	30	50	74	41	109	55	114	92	28	30	6.0	6.1
25	28	49	79	40	95	53	110	86	27	30	6.1	6.0
26	27	48	74	39	84	54	106	78	27	28	5.8	6.4
27	26	43	70	38	80	81	100	74	33	27	5.6	6.5
28	51	63	156	37	76	86	94	96	1260	24	6.1	6.3
29	79	64	134	35	---	83	90	84	453	22	5.5	4.9
30	51	55	109	34	---	131	87	74	246	22	8.4	4.7
31	43	---	99	33	---	237	---	70	---	21	9.2	---
TOTAL	1723	3089	4786	1738	3655	2480	7413	3126	3097	3251	288.7	229.0
MEAN	55.6	103	154	56.1	131	80.0	247	101	103	105	9.31	7.63
MAX	325	500	633	93	504	237	840	183	1260	660	19	24
MIN	26	43	52	33	33	53	87	70	27	21	5.0	4.3
CFSM	.57	1.05	1.57	.57	1.34	.82	2.52	1.03	1.05	1.07	.10	.08
IN.	.65	1.17	1.81	.66	1.39	.94	2.81	1.19	1.17	1.23	.11	.09
AC-FT	3420	6130	9490	3450	7250	4920	14700	6200	6140	6450	573	454
CAL YR 1982 TOTAL	55024.0			MEAN 151	MAX 5550	MIN 16	CFSM 1.64	IN 20.87	AC-FT 109100			
WTR YR 1983 TOTAL	34875.7			MEAN 95.5	MAX 1260	MIN 4.3	CFSM .97	IN 13.22	AC-FT 69180			

05454500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in SE1/4 SE1/4 sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft downstream from University Dam, 0.8 mi upstream from Ralston Creek, 3.6 mi downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.--3,271 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 29.00 ft above Iowa City datum, and 617.27 ft NGVD. Oct. 1, 1934 to Sept. 30, 1972, at datum 10.00 ft higher. See WSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Records excellent. Slight fluctuation at low stages caused by powerplant above station. Flow regulated by Coralville Lake (station 05453510) 9.1 mi upstream, since Sept. 17, 1958. Corps of Engineers gage-height telemeter at station.

COOPERATION.--One discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--80 years, 1,692 ft³/s, 7.02 in/yr, 1,225,000 acre-ft/yr; median of yearly mean discharges, 1,460 ft³/s, 6.1 in/yr, 1,060,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft³/s June 8, 1918, gage height, 19.6 ft from graph based on gage readings, site and datum then in use; minimum daily, 29 ft³/s Oct. 21, 22, 1916, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 17, 1881, reached a stage of 21.1 ft, from floodmarks at site and datum in use 1913-21, from information by local resident, discharge, 51,000 ft³/s. Maximum stage known since at least 1850, about 3 ft higher than that of July 17, 1881, occurred in June 1851, discharge, 70,000 ft³/s, estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,490 ft³/s April 26, gage height, 20.72 ft; minimum daily, 401 ft³/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	824	2180	4120	5580	1810	8300	6500	8450	6170	6650	5910	900		
2	760	3530	4320	5590	2620	7980	7720	6310	6180	7010	5850	897		
3	705	4740	1780	5560	2590	7300	5260	6090	6190	6760	5860	892		
4	701	4370	642	5560	2070	6840	1860	6060	6170	6800	5910	682		
5	700	4170	2020	6570	1560	6600	1790	6110	6150	6620	5840	401		
6	706	3190	2760	6080	1210	5620	2520	6200	6130	6570	5760	635		
7	792	2620	1480	4800	1040	5090	5610	6210	6100	6530	5680	688		
8	1120	2600	959	4140	1030	5480	7840	6160	6080	6420	5590	572		
9	1790	2470	1190	3680	1050	5680	8190	6140	6050	6490	5350	658		
10	2580	2180	3230	3300	1390	5900	7110	6120	6020	6450	4800	663		
11	3140	2280	3920	3280	1620	5880	6390	6100	5980	6330	3850	884		
12	2480	2660	4280	2870	1610	5880	6750	6120	5910	6360	1900	983		
13	1560	1820	4280	2470	1620	5540	7310	6140	5950	6380	870	653		
14	1540	2110	4270	2830	1630	4040	7740	6140	5950	6400	1130	483		
15	1380	3540	5360	2580	2410	2050	8060	6100	5980	6400	1130	503		
16	1230	4320	6750	2030	4440	1210	8030	6060	6020	6400	1040	588		
17	1230	4330	6620	1600	5350	1230	8040	6030	6110	6390	884	676		
18	1220	4380	6670	1520	5880	1150	8050	6050	6260	6370	760	665		
19	1230	4370	6610	1530	6300	1240	8080	6180	6190	6340	714	692		
20	1240	4370	6540	1530	6960	1250	7080	6080	6120	6200	711	712		
21	1190	4340	6620	1660	7580	1260	4560	6070	6070	6030	706	927		
22	1040	4320	6820	1900	8070	1780	5450	6050	6010	6000	727	1210		
23	1040	4310	6630	1900	8270	3710	7580	6000	6080	5970	646	1560		
24	1290	4280	6420	1900	8170	6120	7930	5980	6180	5940	590	1730		
25	1530	4260	6290	1990	8080	8060	8660	6010	6110	5900	585	1830		
26	1620	4230	4480	2200	8080	8420	9320	4680	6040	5850	583	2120		
27	1710	4190	3140	2040	8110	8390	9450	2400	6010	5860	648	2280		
28	1710	4250	4820	1710	8310	8230	9400	3050	8240	5910	775	2270		
29	1860	4200	6710	1580	---	7770	9340	4860	6480	5910	786	2270		
30	1890	4140	6710	1570	---	6990	9250	6100	6360	5870	576	2110		
31	1790	---	5540	1550	---	6550	---	6180	---	5850	654	---		
TOTAL	43598	108720	141981	93100	118860	161540	210870	182200	185290	194960	76815	32134		
MEAN	1406	3624	4580	3003	4245	5211	7029	5877	6176	6289	2478	1071		
MAX	3140	4740	6820	6570	8310	8420	9450	8450	8240	7010	5910	2280		
MIN	700	1820	642	1520	1030	1150	1790	2400	5910	5850	576	401		
AC-FT	86480	215600	281600	184700	235800	320400	418300	361400	367500	386700	152400	63740		
CAL YR 1982 TOTAL		1317123	MEAN	3609	MAX	8800	MIN	354	CFSM	1.10	IN	14.98	AC-FT	2613000
WTR YR 1983 TOTAL		1550068	MEAN	4247	MAX	9450	MIN	401	CFSM	1.30	IN	17.63	AC-FT	3075000

IOWA RIVER BASIN

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at Benton Street bridge at Iowa City, 0.5 mi downstream from gaging station.

PERIOD OF RECORD.--September 1906 to September 1907, water years 1944 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSIS: September 1906 to September 1907, October 1943 to September 1954.

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: January 1944 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1943 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at times of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 750 micromhos Feb. 25, 1972, Mar. 2, 7, 1977; minimum daily, 150 micromhos May 17, 1974.

WATER TEMPERATURES: Maximum daily, 32.0°C July 19, 1957, Aug. 24, 25, 1959, June 27, 1971; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,800 mg/L June 13, 1953; minimum daily mean, 1 mg/L Feb. 4, 1979.

SEDIMENT LOADS: Maximum daily, 177,000 tons May 23, 1944; minimum daily, 0.82 ton Jan. 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 710 micromhos Jan. 1S; minimum daily, 340 micromhos July 12.

WATER TEMPERATURES: Maximum daily, 29.5°C Aug. 9; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 572 mg/L June 2B; minimum daily mean, 13 mg/L Jan. 13, Feb. 7.

SEDIMENT LOADS: Maximum daily, 13,000 tons June 28; minimum daily, 37 tons Feb. 7.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	610	680	---	---	430	---	---	530	610	---	---
2	---	---	---	---	---	---	---	---	---	---	540	---
3	---	660	---	---	---	---	570	---	500	---	470	---
4	530	650	---	---	---	510	---	550	---	---	---	---
5	---	650	---	670	---	---	---	---	---	480	---	---
6	---	---	600	690	---	---	550	600	---	---	---	---
7	540	---	630	---	650	550	530	---	520	---	---	520
8	550	540	620	---	---	---	470	---	530	---	---	---
9	---	---	---	---	620	560	---	600	---	---	510	510
10	---	570	590	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	570	480	580	---	---	---	---
12	570	490	---	---	---	---	---	580	---	340	---	---
13	---	---	630	710	---	---	510	600	560	---	---	500
14	580	---	---	---	570	600	---	---	---	---	---	---
15	---	590	620	---	---	---	540	---	570	---	---	---
16	---	620	600	---	560	610	---	600	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	560	---	---	---	---	---	550	---	---	---	---	---
19	---	510	---	480	---	---	---	---	---	---	---	---
20	---	---	640	---	---	---	510	610	---	---	---	480
21	510	---	690	---	---	---	510	---	620	400	---	480
22	500	520	---	---	---	---	520	---	---	---	---	480
23	---	---	---	---	---	590	---	---	---	---	---	480
24	---	560	---	---	---	620	---	---	---	---	---	470
25	---	---	---	---	---	---	---	610	---	---	500	---
26	510	---	---	---	---	---	520	---	---	---	---	470
27	530	---	680	---	---	---	510	610	---	---	---	470
28	---	---	---	690	420	---	---	---	---	---	---	460
29	---	660	---	---	---	630	530	---	---	---	510	450
30	---	---	670	---	---	630	---	---	---	---	---	450
31	---	---	---	---	---	---	---	560	---	---	---	---

05484500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	12.0	5.0	---	---	5.0	---	---	17.5	25.0	---	---
2	---	---	---	---	---	---	---	---	---	---	28.5	---
3	---	10.0	---	---	.0	---	---	14.0	20.0	---	28.5	---
4	19.5	9.5	---	---	---	9.5	6.5	15.5	---	---	---	---
5	---	18.0	---	1.0	---	---	---	---	---	22.5	---	---
6	---	---	5.0	1.0	---	---	6.0	17.0	---	---	---	---
7	18.5	---	4.5	---	1.0	12.0	6.0	---	21.0	---	---	27.5
8	17.0	8.5	3.0	---	---	---	6.5	---	21.0	---	---	---
9	---	---	---	---	---	5.5	---	16.0	---	---	29.5	26.5
10	---	5.5	4.0	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	6.0	17.0	---	---	---	---
12	17.0	6.0	---	---	---	---	---	17.0	---	25.5	---	---
13	---	---	3.0	2.0	---	---	7.0	16.0	22.0	---	---	23.5
14	16.0	---	---	---	3.0	---	---	---	---	---	---	---
15	---	5.0	2.0	---	---	6.0	7.0	---	24.5	---	28.0	---
16	---	6.0	2.5	---	2.5	7.0	---	15.0	---	---	---	---
17	---	---	---	2.0	---	---	---	---	---	---	---	---
18	16.0	---	---	---	---	---	8.0	---	---	---	29.0	---
19	---	15.0	---	1.5	---	---	---	---	---	---	---	24.0
20	---	---	2.0	---	---	---	9.0	18.0	---	---	---	19.0
21	12.0	---	2.0	---	---	---	10.0	---	25.0	28.5	---	18.0
22	12.0	5.0	---	---	---	---	10.0	---	---	---	---	20.0
23	---	---	---	---	---	6.0	---	---	---	---	---	18.0
24	---	5.0	---	---	---	7.0	---	---	---	---	28.5	20.0
25	---	---	---	---	---	---	---	17.5	---	---	29.0	---
26	12.0	12.0	---	---	---	---	12.5	---	---	---	20.0	18.0
27	11.0	---	3.0	---	---	---	11.5	19.0	28.0	---	---	20.0
28	---	---	---	2.0	5.0	---	---	---	---	---	---	20.0
29	---	4.5	---	---	---	4.0	14.0	---	---	---	22.0	---
30	---	---	2.0	---	---	4.0	---	---	---	---	---	20.0
31	---	---	---	1.0	---	---	---	16.0	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)										
1	35	78	53	312	42	467	42	633	19	93	116	2600
2	34	70	69	658	182	2120	39	589	18	127	114	2460
3	34	65	58	742	84	404	36	540	18	126	123	2420
4	33	62	62	732	79	137	33	495	17	95	137	2530
5	35	66	107	1200	180	1250	25	461	16	67	152	2710
6	35	69	134	1150	217	1780	25	427	14	45	236	3580
7	43	92	80	566	72	288	28	363	13	37	188	2750
8	47	142	47	330	27	70	26	291	14	39	132	1950
9	104	503	40	267	45	145	25	248	16	45	82	1250
10	175	1230	32	188	143	1250	23	205	18	68	50	955
11	145	1240	59	363	58	614	19	168	18	79	52	825
12	66	442	435	3150	47	543	16	124	17	74	46	730
13	57	240	167	821	38	439	13	87	17	74	39	583
14	52	216	95	541	35	404	16	122	15	66	32	349
15	50	186	98	937	90	1300	19	132	84	718	35	194
16	50	165	45	525	95	1730	22	121	405	5000	33	108
17	50	166	31	362	57	1020	25	108	423	5110	34	113
18	50	165	35	423	51	918	28	115	360	5720	36	112
19	49	163	40	472	42	750	30	124	335	5700	37	124
20	47	157	42	495	33	583	32	132	312	5860	37	125
21	44	141	40	469	32	572	31	139	288	5890	36	122
22	38	107	37	432	35	644	28	144	263	5730	38	183
23	37	104	35	407	30	537	27	139	239	5340	45	461
24	43	150	31	358	26	451	25	128	215	4740	46	760
25	48	198	28	322	21	357	25	134	192	4190	45	979
26	37	162	25	285	45	544	25	148	172	3750	43	978
27	36	166	22	249	30	254	28	154	154	3370	40	906
28	34	157	19	218	18	234	29	134	135	3030	38	844
29	37	186	15	170	31	562	27	115	---	---	36	755
30	34	174	15	168	48	870	24	102	---	---	31	585
31	31	150	---	---	45	673	21	88	---	---	26	460
TOTAL	---	7213	---	17314	---	21910	---	6910	---	56184	---	33513

IOWA RIVER BASIN
05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	28	491	54	1230	30	500	425	7650	33	527	51	124
2	222	4630	52	886	34	567	482	9120	32	505	48	116
3	177	2510	48	789	38	635	440	8030	30	475	45	108
4	125	628	39	638	40	666	321	5890	30	479	44	81
5	101	488	41	676	34	565	236	4220	30	473	40	43
6	95	646	45	753	27	447	199	3530	28	435	35	60
7	138	2090	45	755	19	313	181	3190	25	383	31	58
8	106	2240	45	748	19	312	170	2950	23	347	34	53
9	83	1840	45	746	25	408	162	2840	35	506	35	64
10	58	1110	46	760	29	471	155	2700	58	752	36	64
11	35	604	48	791	32	517	148	2530	57	593	45	107
12	67	1220	55	909	34	543	140	2400	56	287	43	114
13	70	1380	44	729	36	578	134	2310	56	132	36	63
14	58	1210	36	597	40	643	128	2210	55	168	32	42
15	43	936	34	560	45	727	121	2090	55	168	30	41
16	37	802	33	540	48	780	111	1920	51	143	44	70
17	36	781	36	586	51	841	99	1710	46	110	62	113
18	34	739	39	637	55	930	86	1480	38	78	53	95
19	31	676	44	734	57	953	73	1250	35	67	43	80
20	28	535	47	772	60	991	61	1020	35	67	45	87
21	26	320	46	754	55	1070	48	781	35	67	60	150
22	28	412	45	735	68	1100	44	713	35	69	57	186
23	25	512	44	713	80	1310	43	693	34	59	70	295
24	29	621	42	678	94	1570	41	558	34	54	88	411
25	55	1290	37	600	87	1440	38	605	49	77	79	390
26	57	1430	37	468	80	1300	35	553	45	71	75	429
27	60	1530	37	240	89	1440	36	570	40	70	70	431
28	57	1450	37	305	572	13000	36	574	62	130	64	392
29	55	1390	36	472	475	8310	35	558	62	132	57	349
30	55	1370	35	576	466	8000	35	555	56	87	48	273
31	---	---	34	565	---	---	34	537	53	94	---	---
TOTAL	---	35881	---	20942	---	50927	---	75837	---	7605	---	4889
TOTAL LOAD FOR YEAR:			349125	TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 26...	1500	12.0	1690	39	177	98
APR 11...	1045	6.0	6450	52	906	89
MAY 16...	1045	16.0	6210	31	520	90
JUN 27...	1445	28.0	5960	77	1240	79
AUG 02...	1145	28.5	5960	34	547	92
SEP 09...	1200	26.5	574	38	69	98

IOWA RIVER BASIN

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	NUMBER OF SAM- PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT 26...	1200	1690	3	--	0	2	44
MAY 16...	1045	6210	5	--	0	9	66
AUG 02...	1145	1140	5	--	0	8	64
SEP 09...	1300	674	10	0	1	6	35

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT 26...	88	95	97	98	100	--
MAY 16...	88	96	97	98	100	--
AUG 02...	95	98	99	100	--	--
SEP 09...	57	74	81	87	97	100

IOWA RIVER BASIN

05455000 RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'50", long 91°30'48", in SE1/4 NW1/4 sec.11, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft upstream from bridge on Rochester Avenue, 1.0 mi northeast of post office in Iowa City and 2.2 mi upstream from mouth.

DRAINAGE AREA.--3.01 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1508: 1933, 1935-37, 1940-41 (M), 1942, 1943 (M), 1948-51, 1952 (P), 1953, 1954 (M), 1955. WDR IOWA 1967: 1965-66; WDR IA-80-1: 1965(M).

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 663.27 ft NGVD (University of Iowa bench mark).

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--59 years, 1.71 ft³/s, 7.71 in/yr, 1,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s July 17, 1972, gage height, 9.01 ft; maximum gage height, 9.06 ft July 18, 1956; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 167 ft/s, Dec. 2, gage height, 4.05 ft at 0155 hours, no peak above base of 200 ft/s; no flow Aug. 6-9, 13-21, 24-26, 28-29, Sept. 1-5, 8-14, 25, 29-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.23	2.9	1.6	1.3	.50	1.8	6.9	3.9	.99	10	.08	.00
2	.16	1.4	53	1.2	.48	1.7	47	4.4	.95	8.8	.06	.00
3	.16	.85	6.4	1.0	.45	1.7	14	2.7	.90	4.4	.02	.00
4	.16	.63	8.1	1.1	.40	1.5	8.3	1.9	.79	7.8	.02	.00
5	.15	.58	43	1.2	.37	1.9	7.9	1.6	.77	1.8	.01	.00
6	.18	.39	10	1.3	.34	3.6	7.9	1.7	.79	1.3	.00	.69
7	.15	.38	5.7	1.1	.33	2.0	6.0	2.2	.68	1.1	.00	.02
8	.61	.35	3.9	.95	.34	1.7	4.7	1.5	.61	.98	.00	.00
9	1.6	.55	2.8	1.1	.38	1.4	12	1.4	.56	.84	.00	.00
10	.29	.34	2.4	1.4	.44	1.3	8.3	1.4	.55	.71	.22	.00
11	.25	4.3	2.1	.96	.48	1.4	6.3	1.4	.49	.73	.26	.00
12	.23	7.2	1.6	.66	.63	1.4	5.3	1.7	.43	.50	.01	.00
13	.21	1.8	1.7	.74	.75	1.4	5.6	1.6	.46	.42	.00	.00
14	.13	1.4	1.7	.78	1.2	1.3	6.3	1.5	.33	.38	.00	.00
16	.18	1.1	1.6	.64	2.3	1.3	4.4	1.3	.33	.35	.00	.09
16	.21	1.1	1.5	.56	20	1.1	3.8	1.2	.29	.34	.00	.10
17	.20	1.0	1.4	.48	15	1.1	3.8	1.1	.32	.32	.00	.03
18	.18	.79	1.6	.44	16	1.0	3.6	2.1	.95	.58	.00	.05
19	.80	.91	1.3	.42	15	1.1	3.4	3.3	.72	.75	.00	.80
20	.92	.87	1.2	.47	6.9	1.3	3.0	1.6	.44	.68	.00	1.1
21	.49	.65	1.2	.55	4.9	1.3	2.6	2.6	.36	.56	.00	.15
22	.38	.59	1.3	.67	4.0	1.0	2.5	2.1	.32	.48	.20	.02
23	.37	.65	1.5	.80	3.1	1.0	2.3	1.4	.26	.50	.02	.01
24	.35	.53	1.8	.79	2.6	1.0	2.1	1.2	.26	.49	.00	.01
25	.31	.46	1.6	.62	2.0	1.0	2.0	1.3	.22	.57	.00	.00
26	.29	.51	1.2	.46	1.8	1.3	2.0	1.0	.21	.39	.00	.01
27	.27	.48	2.2	.40	2.0	4.1	1.6	1.1	.69	.33	.03	.01
28	.57	1.6	3.6	.52	1.9	3.6	1.6	1.3	20	.38	.00	.01
29	.68	1.3	1.7	.66	---	3.8	1.4	1.2	2.8	.25	.00	.00
30	.58	1.1	1.5	.60	---	5.0	1.5	1.2	1.6	.18	.46	.00
31	.63	---	1.4	.45	---	5.0	---	1.1	---	.13	.02	---
TOTAL	11.92	36.71	171.6	24.32	104.59	59.1	188.0	55.0	39.07	47.04	1.41	3.10
MEAN	.38	1.22	5.54	.78	3.74	1.91	6.27	1.77	1.30	1.52	.045	.10
MAX	1.6	7.2	53	1.4	20	5.0	47	4.4	20	10	.46	1.1
MIN	.13	.34	1.2	.40	.33	1.0	1.4	1.0	.21	.13	.00	.00
CFSM	.13	.41	1.84	.26	1.24	.64	2.08	.59	.43	.51	.02	.03
IN.	.15	.45	2.12	.30	1.29	.73	2.32	.68	.48	.58	.02	.04
AC-FT	24	73	340	48	207	117	373	109	77	93	2.8	5.1
CAL YR 1982	TOTAL	1130.26	MEAN 3.10	MAX 76	MIN .13	CFSM 1.03	IN 13.96	AC-FT 2240				
WTR YR 1983	TOTAL	741.86	MEAN 2.03	MAX 53	MIN .00	CFSM .67	IN 9.17	AC-FT 1470				

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1952 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURES: October 1960 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1952 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,000 micromhos Dec. 24, 1973; minimum daily, 120 micromhos May 19, 20, 1977.

WATER TEMPERATURES: Maximum daily, 31.0°C July 21, 1968; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,300 mg/L Aug. 20, 1975; minimum daily mean, 0 mg/L on many days in 1953-59, 1963-68, 1971, 1975-77, 1980-81, 1983.

SEDIMENT LOADS: Maximum daily, 4,300 tons May 23, 1966; minimum daily, 0 ton on many days most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 930 micromhos Feb. 12; minimum daily, 130 micromhos Sept. 15.

WATER TEMPERATURES: Maximum daily, 28.0°C July 22; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,090 mg/L Dec. 5; minimum daily mean, 0 mg/L on many days during August and September.

SEDIMENT LOADS: Maximum daily, 925 tons Dec. 5; minimum daily, 0 ton on many days during August and September.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	ONCE-DAILY											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	410	600	850	530	---	490	570	600	---	580	---
2	550	640	410	490	---	---	490	460	570	---	610	---
3	---	650	---	---	---	---	490	530	600	---	660	---
4	570	---	---	---	---	510	560	540	570	590	650	---
5	560	---	---	---	---	---	590	530	580	670	670	---
6	---	---	410	---	---	---	560	630	680	560	680	---
7	---	---	490	---	---	---	590	580	550	---	---	---
8	510	520	460	---	---	560	590	600	700	---	---	---
9	---	---	---	---	---	---	180	530	660	---	---	---
10	---	530	---	---	---	---	550	560	700	---	---	---
11	---	420	---	---	---	---	590	510	600	---	600	---
12	---	320	---	---	930	---	610	540	650	---	700	---
13	---	---	---	---	870	630	590	640	710	---	---	---
14	---	510	500	---	870	---	570	530	650	580	510	---
15	510	470	500	---	---	---	600	580	---	580	580	130
16	510	500	500	---	---	---	560	680	550	580	500	---
17	---	---	480	---	---	---	640	540	540	580	590	---
18	520	---	480	---	380	---	520	580	540	580	590	290
19	---	---	---	---	390	---	520	610	630	---	550	---
20	580	510	---	---	---	---	590	740	---	---	580	---
21	---	---	---	---	---	---	620	620	560	580	---	---
22	640	500	---	---	---	650	540	600	540	580	280	---
23	---	510	---	---	560	---	530	540	---	580	520	---
24	580	---	---	---	550	---	480	660	530	---	540	---
25	620	---	---	---	---	630	490	670	---	---	500	---
26	540	---	---	---	510	---	660	600	530	---	480	520
27	540	---	---	---	---	550	520	560	---	---	400	530
28	530	---	---	---	530	700	680	600	360	---	380	550
29	530	550	540	---	---	670	680	560	700	---	400	---
30	630	550	---	---	---	600	510	580	550	620	200	---
31	610	---	---	---	---	---	---	520	---	600	500	---

IOWA RIVER BASIN

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	14.0	5.0	1.0	1.0	3.0	4.0	13.0	14.0	20.0	25.0	---
2	14.0	10.0	12.0	2.0	.0	6.0	4.0	10.0	15.0	20.0	20.0	---
3	13.0	10.0	8.0	3.0	.0	8.0	4.0	9.0	16.0	21.0	25.0	---
4	12.0	9.0	7.0	2.0	.0	9.0	4.0	11.0	17.0	19.0	26.0	---
5	14.0	4.0	7.0	2.0	.0	10.0	4.0	10.0	16.0	19.0	25.0	---
6	18.0	5.0	3.0	3.0	.0	11.0	5.0	10.0	14.0	18.0	---	21.0
7	14.0	4.0	3.0	2.0	.0	7.0	6.0	14.0	18.0	18.0	---	21.0
8	12.0	6.0	2.0	1.0	.0	2.0	5.0	10.0	15.0	18.0	---	---
9	13.0	7.0	.0	3.0	1.0	---	2.0	10.0	17.0	20.0	---	---
10	14.0	10.0	2.0	3.0	2.0	2.0	5.0	12.0	18.0	23.0	---	---
11	12.0	7.0	.0	1.0	2.0	2.0	7.0	13.0	18.0	22.0	20.0	---
12	10.0	8.0	.0	2.0	1.0	2.0	6.0	15.0	20.0	23.0	18.0	---
13	10.0	3.0	2.0	3.0	2.0	2.0	7.0	16.0	22.0	23.0	---	---
14	11.0	4.0	1.0	1.0	2.0	4.0	5.0	14.0	20.0	23.0	---	---
15	10.0	3.0	2.0	2.0	2.0	6.0	3.0	10.0	17.0	23.0	---	15.0
16	10.0	3.0	1.0	2.0	2.0	8.0	3.0	12.0	17.0	23.0	---	14.0
17	10.0	1.0	.0	1.0	3.0	6.0	3.0	12.0	17.0	24.0	---	17.0
18	9.0	4.0	3.0	1.0	4.0	6.0	3.0	10.0	17.0	25.0	---	19.0
19	13.0	10.0	3.0	1.0	6.0	6.0	4.0	12.0	18.0	23.0	---	15.0
20	8.0	8.0	2.0	2.0	---	3.0	5.0	12.0	19.0	25.0	---	15.0
21	6.0	9.0	2.0	3.0	5.0	2.0	7.0	14.0	20.0	27.0	---	14.0
22	7.0	5.5	3.0	1.0	3.0	2.0	9.0	16.0	22.0	28.0	25.0	9.0
23	5.0	4.0	5.0	2.0	4.0	3.0	11.0	14.0	21.0	25.0	22.0	8.0
24	8.0	1.0	8.0	1.0	3.0	3.0	9.0	15.0	23.0	24.0	---	8.0
25	7.0	3.0	---	.0	3.0	3.0	9.0	14.0	22.0	22.0	---	---
26	5.0	2.0	---	.0	2.0	1.0	10.0	13.0	23.0	23.0	---	13.0
27	10.0	1.0	---	1.0	3.0	1.0	13.0	14.0	23.0	25.0	---	16.0
28	10.0	3.0	2.0	1.0	3.0	3.0	12.0	15.0	22.0	24.0	---	---
29	10.0	3.0	1.0	.0	---	3.0	14.0	13.0	20.0	25.0	---	---
30	10.0	4.0	---	2.0	---	5.0	14.0	13.0	20.0	25.0	23.0	---
31	11.0	---	1.0	3.0	---	4.0	---	12.0	---	27.0	21.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)										
1	89	.06	222	2.6	430	832	32	.11	22	.03	44	.21
2	94	.04	75	.28	3250	465	47	.15	20	.03	48	.22
3	95	.04	67	.15	170	2.9	54	.15	36	.04	61	.28
4	50	.02	57	.10	1990	93	67	.20	46	.05	96	.39
5	65	.03	58	.09	6090	925	75	.24	30	.03	95	.49
6	80	.04	86	.09	270	7.3	76	.27	35	.03	84	.82
7	94	.04	94	.10	140	2.2	55	.16	65	.06	42	.23
8	107	.18	70	.07	137	1.4	73	.19	61	.06	34	.16
9	71	.31	62	.09	146	1.1	104	.31	31	.03	44	.17
10	77	.06	85	.08	149	.97	139	.53	15	.02	50	.18
11	81	.05	234	2.7	144	.82	55	.14	42	.05	40	.15
12	115	.07	525	10	129	.56	58	.10	43	.07	34	.13
13	126	.07	68	.33	71	.33	53	.11	24	.05	29	.11
14	96	.03	64	.24	38	.17	34	.07	32	.10	41	.14
15	183	.09	68	.20	47	.20	36	.06	158	.98	49	.17
16	139	.08	66	.20	32	.13	29	.04	540	29	43	.13
17	121	.07	77	.21	52	.20	42	.05	620	25	34	.10
18	92	.04	70	.15	117	.51	31	.04	390	17	34	.09
19	49	.11	73	.18	73	.26	42	.05	1100	45	34	.10
20	66	.16	74	.17	68	.22	46	.06	500	9.3	34	.12
21	78	.10	79	.14	63	.20	27	.04	98	1.3	34	.12
22	55	.06	84	.13	62	.22	29	.05	50	.54	37	.10
23	97	.10	93	.16	42	.17	30	.06	45	.38	45	.12
24	73	.07	85	.12	39	.19	24	.05	48	.34	38	.10
25	78	.07	67	.08	34	.15	25	.04	45	.24	40	.11
26	131	.10	83	.11	29	.09	26	.03	39	.19	67	.24
27	54	.04	89	.12	192	1.1	16	.02	42	.23	101	1.1
28	65	.10	64	.28	278	2.7	25	.04	53	.27	44	.43
29	63	.12	56	.20	74	.34	50	.09	---	---	32	.33
30	78	.12	56	.17	30	.12	30	.05	---	---	53	.72
31	43	.07	---	---	49	.19	20	.02	---	---	39	.53
TOTAL	---	2.54	---	19.54	---	2339.74	---	3.52	---	130.42	---	8.29

IOWA RIVER BASIN

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)											
	CONCENTRATION (MG/L)	LOADS (T/DAY)										
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	108	2.0	122	3.3	154	.41	1680	46	69	.01	---	---
2	130	16	222	2.6	124	.32	1190	44	92	.01	---	---
3	100	3.8	76	.55	109	.26	456	17	52	.00	---	---
4	50	1.1	74	.38	103	.22	1160	37	75	.00	---	---
5	46	.98	93	.40	113	.23	460	2.2	78	.00	---	---
6	36	.77	63	.29	135	.29	133	.47	---	---	62	.12
7	21	.34	84	.50	123	.23	133	.40	---	---	60	.00
8	24	.30	78	.32	98	.16	141	.37	---	---	---	---
9	124	4.0	73	.28	88	.13	115	.26	---	---	---	---
10	39	.87	94	.36	88	.13	125	.24	55	.03	---	---
11	23	.39	87	.33	104	.14	165	.32	70	.05	---	---
12	28	.40	84	.39	93	.11	170	.23	29	.00	---	---
13	27	.41	50	.22	75	.09	145	.16	---	---	---	---
14	41	.70	106	.43	105	.09	155	.16	---	---	---	---
15	95	1.1	75	.26	135	.12	153	.14	---	---	83	.02
16	50	.51	44	.14	175	.14	140	.13	---	---	27	.00
17	45	.46	86	.26	235	.20	89	.08	---	---	23	.00
18	71	.69	75	.43	273	.70	81	.13	---	---	100	.01
19	85	.78	107	.95	203	.39	116	.23	---	---	84	.18
20	34	.28	42	.18	124	.15	112	.21	---	---	118	.35
21	58	.41	82	.58	107	.10	115	.17	---	---	119	.05
22	57	.38	84	.48	136	.12	116	.15	122	.07	73	.00
23	74	.46	105	.40	171	.12	107	.14	24	.00	52	.00
24	65	.31	56	.18	161	.11	96	.13	---	---	25	.00
25	75	.41	70	.25	138	.08	100	.16	---	---	---	---
26	65	.35	134	.36	134	.08	108	.11	---	---	15	.00
27	104	.45	104	.31	384	5.6	108	.10	47	.00	15	.00
28	96	.39	64	.22	1670	247	96	.10	---	---	15	.00
29	64	.24	94	.30	330	2.5	88	.06	---	---	---	---
30	86	.35	115	.37	310	1.3	71	.03	86	.11	---	---
31	---	---	109	.32	---	---	62	.02	31	.00	---	---
TOTAL	---	39.63	---	16.34	---	261.52	---	150.89	---	0.28	---	0.73
TOTAL LOAD FOR YEAR:			2973.44	TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C)	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. FALL DIAM. X FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. X FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. X FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. X FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)	
											(00010)	(00061)	(80154)	(80155)	(70337)	(70338)	(70339)	(70340)	(70331)
JUL	01...	1000	20.0	55	5250	780	43	50	65	81	100

IOWA RIVER BASIN

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW1/4 NE1/4 sec.14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--2.94 mi².

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR IOWA 1966: Drainage area.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 2.46 ft³/s, 11.36 in/yr, 1,780 acre-ft/yr; median of yearly mean discharges, 2.2 ft³/s, 10.2 in/yr, 1,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,070 ft³/s July 17, 1972, gage height, 9.47 ft; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft, from flood profile, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 441 ft/s, Dec. 2, gage height, 7.00 ft at 0045 hours, no other peak above base of 200 ft/s; no flow Aug. 8-9, 16-21, 24-26, 29, Sept. 1-5, 8, 9, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.27	3.3	10	1.4	.79	1.9	10	7.4	.83	11	.05	.00
2	.26	1.2	69	1.3	.72	1.8	58	2.8	.75	10	.04	.00
3	.27	.82	6.3	1.3	.60	1.9	15	2.6	.82	9.6	.04	.00
4	.28	.74	15	1.3	.58	1.4	7.6	1.5	.71	9.2	.03	.00
5	.27	.65	64	1.2	.54	3.4	9.0	1.3	.73	1.9	.03	.00
6	.39	.84	14	1.2	.50	6.0	7.5	1.4	.72	1.4	.02	4.0
7	.27	.50	6.8	1.1	.48	2.3	5.1	3.4	.68	1.2	.01	.02
8	5.8	.45	4.8	1.0	.52	1.8	3.9	1.3	.60	.97	.00	.00
9	1.3	.79	3.5	1.3	.58	1.5	20	1.2	.54	.82	.00	.00
10	.43	.43	3.2	1.6	.70	1.3	8.9	1.2	.48	.73	5.0	.51
11	.34	15	2.6	.94	.79	1.2	5.5	1.7	.44	.68	.17	.05
12	.31	8.5	2.3	.90	.86	1.2	5.7	1.4	.45	.61	.02	.04
13	.27	1.9	2.1	.86	1.4	1.1	5.6	1.4	.57	.85	.02	.06
14	.24	1.4	2.0	.82	1.8	1.0	6.3	1.5	.55	.65	.11	.00
15	.24	1.1	1.8	.72	3.6	1.1	3.8	1.0	.53	.56	.02	2.4
16	.19	.92	1.7	.72	26	.94	3.2	.92	.58	.39	.00	.14
17	.11	.78	1.9	.69	21	.91	2.9	.93	.53	.36	.00	.62
18	.22	.74	2.3	.68	21	.79	2.5	3.6	2.0	.37	.00	.38
19	3.0	.87	1.9	.66	20	.79	2.3	5.0	1.1	.28	.00	4.8
20	.67	.64	1.7	.67	7.4	1.4	2.4	1.3	.77	.24	.00	3.5
21	.25	.55	1.5	.84	5.4	1.1	2.4	3.3	.67	.20	.00	.10
22	.25	.74	1.4	1.1	4.7	.76	2.0	1.4	.57	.17	3.4	.07
23	.19	.63	1.7	1.3	3.6	.67	1.6	1.1	.55	.16	.02	.05
24	.20	.50	2.2	.79	3.6	.70	1.6	1.3	.53	.15	.00	.12
25	.19	.50	1.7	.66	2.7	.65	2.3	1.1	.50	.15	.00	.48
26	.16	.45	1.4	.63	2.3	1.7	2.8	.92	.47	.11	.00	.36
27	.15	.43	5.7	.61	2.1	7.7	2.2	.99	1.1	.10	.50	.39
28	4.3	3.5	4.7	.80	1.9	3.1	1.3	1.6	8.6	.08	.19	.14
29	1.0	.92	2.5	1.0	---	3.3	1.4	1.1	1.9	.08	.00	.04
30	.53	.79	1.9	.72	---	4.0	1.3	.92	.84	.09	4.7	.16
31	.90	---	1.7	.62	---	3.5	---	1.7	---	.10	.04	---
TOTAL	23.25	50.29	243.3	29.43	136.15	50.91	204.1	58.28	30.11	52.90	14.41	18.43
MEAN	.75	1.68	7.85	.95	4.86	1.96	6.80	1.88	1.00	1.71	.46	.61
MAX	5.8	15	69	1.6	25	7.7	58	7.4	8.6	11	5.0	4.8
MIN	.11	.43	1.4	.61	.48	.65	1.3	.92	.44	.08	.00	.00
CFSM	.25	.57	2.67	.32	1.65	.67	2.31	.64	.34	.58	.16	.21
IN.	.29	.64	3.08	.37	1.72	.77	2.58	.74	.38	.67	.18	.23
AC-FT	46	100	483	58	270	121	405	116	60	105	29	37

CAL YR 1982 TOTAL 1326.44 MEAN 3.63 MAX 132 MIN .11 CFSM 1.24 IN 16.78 AC-FT 2630
WTR YR 1983 TOTAL 921.57 MEAN 2.52 MAX 69 MIN .00 CFSM .86 IN 11.56 AC-FT 1830

05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°27'59", long 91°42'56", in SE1/4 SE1/4 sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft upstream from bridge on State Highway 1, 0.8 mi south of Kalona, 1.1 mi upstream from Camp Creek, 4.5 mi downstream from Smith Creek, and 14.5 mi upstream from mouth.

DRAINAGE AREA.--573 mi².

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1940 (M), 1941. WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage recorder. Datum of gage is 633.45 ft NGVD (levels by Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--44 years, 370 ft³/s, 8.77 in/yr, 268,100 acre-ft/yr; median of yearly mean discharges, 330 ft³/s, 7.8 in/yr. 239,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s Sept. 21, 1965, gage height, 21.45 ft; minimum daily, 0.66 ft³/s Feb. 5-7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft. from floodmark, from information by local residents; discharge, 18,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 7	unknown	4,790	13.8	Apr. 10	1245	4,000	12.86
Apr. 2	2300	*6,590	*15.71				

Minimum daily discharge, 6.1 ft³/s Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	272	484	530	170	342	1830	389	425	1070	46	23
2	98	1270	1990	450	160	327	5230	767	373	1590	39	24
3	93	776	1450	400	160	314	6560	875	349	1920	34	11
4	94	513	926	380	155	306	5830	738	324	1590	30	8.6
5	90	413	2350	360	150	304	2500	631	291	1490	25	8.0
6	86	356	4520	330	145	568	2120	551	271	681	22	14
7	110	323	4380	305	140	1270	1790	524	257	499	22	23
8	127	301	2090	280	140	984	1370	503	237	398	22	24
9	1070	273	1270	265	145	675	1850	437	221	341	22	18
10	2050	264	1020	250	155	513	3920	405	207	295	22	11
11	695	347	883	245	165	451	3620	383	205	261	20	8.8
12	448	2760	684	240	160	413	2190	398	189	232	19	9.2
13	349	3180	650	220	165	397	2690	409	176	209	18	7.5
14	293	1750	630	210	210	391	2880	414	162	193	17	6.6
15	255	951	605	200	1350	367	2480	377	147	177	17	6.1
16	225	741	529	195	3080	342	1540	343	135	164	16	9.2
17	199	652	491	190	2310	326	1220	316	125	147	17	15
18	186	570	485	185	1300	307	1040	313	131	133	15	17
19	182	525	483	180	1180	292	917	594	164	125	15	19
20	238	512	439	175	1320	282	819	742	235	123	13	114
21	340	466	405	180	992	282	740	520	161	118	12	193
22	290	410	391	190	792	264	683	554	131	104	15	163
23	243	396	397	195	674	246	634	561	112	95	12	86
24	220	362	422	190	580	249	579	438	101	87	13	54
25	202	323	515	185	508	249	532	408	94	84	23	51
26	190	329	480	180	422	253	506	399	88	84	21	47
27	180	311	410	175	380	322	475	350	87	80	13	37
28	177	364	1250	175	357	458	436	1410	125	71	14	32
29	215	622	1530	170	---	534	415	1270	252	62	23	28
30	331	548	825	175	---	969	400	620	1160	56	28	28
31	277	---	650	170	---	1690	---	485	---	51	25	---
TOTAL	9657	20881	33635	7575	17465	14687	57796	17124	6935	12530	650	1096.0
MEAN	312	696	1085	244	624	474	1927	552	231	404	21.0	36.5
MAX	2050	3180	4520	530	3080	1690	6560	1410	1160	1920	46	193
MIN	86	264	391	170	140	246	400	313	87	51	12	6.1
CFSM	.86	1.22	1.89	.43	1.09	.83	3.36	.96	.40	.71	.04	.06
IN.	.63	1.36	2.18	.49	1.13	.95	3.75	1.11	.45	.81	.04	.07
AC-FT	19150	41420	66720	15030	34640	29130	114600	33970	13760	24850	1290	2170
CAL YR 1982	TOTAL	277275.0	MEAN 760	MAX 10800	MIN 38	CFSM 1.33	IN 18.00	AC-FT 550000				
WTR YR 1983	TOTAL	200031.0	MEAN 548	MAX 6560	MIN 6.1	CFSM .96	IN 12.99	AC-FT 396800				

IOWA RIVER BASIN

05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat 41°25'15", long 91°28'25", in NW1/4 NE1/4 sec.6, T.76 N., R.5 W., Louisa County, Hydrologic Unit 07080209, on left bank 2,000 ft downstream from new tri-county bridge on county highway W66, 5 mi southwest of Lone Tree, 6.2 mi downstream from English River, and at mile 47.2.

DRAINAGE AREA.--4,293 mi².

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.16 ft NGVD. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 36.1 mi upstream since Sept. 17, 1958. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--27 years, 2,828 ft³/s, 8.95 in/yr, 2,049,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,700 ft³/s May 19, 1974, gage height, 18.97 ft; maximum gage height, 20.27 ft Sept. 22, 1965; minimum daily discharge, 69 ft³/s; Aug. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1944, reached a stage of 19.94 ft, discharge not determined, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,500 ft³/s Apr. 3, gage height, 15.92 ft; minimum daily discharge, 543 ft³/s Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	940	2800	4890	6890	1650	9480	9580	10600	7230	8340	6170	739		
2	900	3600	9360	6730	2100	9390	12800	9320	7180	9050	6150	960		
3	840	5760	6120	6610	2850	8890	16700	8130	7160	10100	6100	945		
4	820	5200	3410	6600	2700	8010	13500	7720	7110	9370	6190	928		
5	805	4930	5300	6500	2000	7750	8520	7580	7050	9490	6130	642		
6	795	4290	10500	7000	1600	7430	6050	7580	6990	8160	6040	543		
7	900	3270	8600	5370	1400	6730	7650	7540	6940	7810	5940	848		
8	1160	3150	6550	5060	1350	7340	9750	7440	6880	7460	5840	669		
9	861	3080	3360	4830	1400	6970	10800	7340	6830	7370	5720	688		
10	4700	2710	3960	4110	1500	7100	12700	7250	6790	7360	5230	719		
11	4290	2740	5300	4050	1700	6980	12800	7200	6710	7140	4720	724		
12	3770	5020	5540	3890	1800	6920	11200	7210	6670	7070	3110	1030		
13	2630	5450	5460	3030	1850	6820	10600	7220	6600	7040	1380	909		
14	2050	4840	5500	3200	2000	5960	11700	7290	6600	7040	1300	629		
15	1950	4270	5600	3100	2650	3890	12000	7200	6560	7020	1320	590		
16	1750	5310	7520	2800	7410	2330	11500	7100	6630	6990	1290	607		
17	1650	5310	7800	2200	10300	2160	10800	7020	6610	6960	1150	690		
18	1600	5230	7760	1900	9050	2110	10400	7030	6820	6920	1010	726		
19	1600	5180	7700	1850	8570	2030	10200	7340	6840	6870	898	825		
20	1600	5160	7600	1800	9120	2080	10000	7830	6820	6800	870	915		
21	1600	5100	7480	2050	9370	2070	7290	7450	6730	6530	846	884		
22	1550	5000	7730	2300	9520	2040	6410	7350	6620	6440	925	1210		
23	1800	4950	7730	2250	9740	3290	8530	7330	6540	6380	845	1390		
24	1500	4870	7510	2250	9740	5630	9160	7160	6690	6330	751	1690		
25	1600	4770	7440	2350	9540	7960	9660	7080	6660	6280	718	1750		
26	1650	4750	7030	2400	9350	9060	10200	6910	6580	6230	709	1930		
27	1750	4700	4050	2500	9280	9490	10700	3950	6520	6170	711	2210		
28	2000	4810	5220	2050	9280	9730	10800	3890	7740	6220	782	2240		
29	2100	5020	8830	1900	---	9700	10800	6570	8350	6240	890	2240		
30	2300	5030	8730	1850	---	9290	10700	7320	7820	6200	836	2230		
31	2100	---	7440	1800	---	9260	---	7290	---	6130	792	---		
TOTAL	55261	137300	207020	112220	148820	197890	313500	225240	207270	223510	85363	33100		
MEAN	1783	4577	6678	3620	5315	6384	10450	7266	6909	7210	2754	1103		
MAX	4700	6450	10500	7000	10300	9730	16700	10600	8350	10100	6190	2240		
MIN	795	2710	3360	1800	1350	2030	6050	3890	6520	6130	709	543		
AC-FT	109600	272300	410600	222600	295200	392500	621800	446800	411100	443300	169300	65650		
CAL YR 1982	TOTAL	1813157	MEAN	4968	MAX	16700	MIN	560	CFSM	1.16	IN	15.71	AC-FT	3596000
WTR YR 1983	TOTAL	1946494	MEAN	5333	MAX	16700	MIN	543	CFSM	1.24	IN	16.87	AC-FT	3861000

IOWA RIVER BASIN

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE1/4 NE1/4, sec.12, T.95 N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi upstream from Gizzard Creek, and at mile 252.9 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,054 mi².

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 973.02 ft NGVD.

REMARKS.--Records good except those for January, which are fair. Occasional minor regulation by dam 0.2 mi above gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945, to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi upstream. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--19 years, 727 ft³/s, 9.37 in/yr, 526,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s Apr. 7, 1965, gage height, 19.14 ft; maximum gage height, 21.64 ft Mar. 2, 1965, backwater from ice; minimum daily discharge, 60 ft³/s Nov. 23, 1977, Jan. 7, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft, from floodmarks, discharge, 29,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 22	0115	3,580	6.75	Apr. 2	2030	5,390	8.55
Nov. 12	1830	5,700	8.89	Apr. 15	0715	6,990	10.06
Feb. 23	1745	3,800	6.84	May 20	1100	3,860	6.89
Mar. 7	1315	*9,440	*12.11	July 3	1745	9,340	12.03
Mar. 18	2345	3,760	6.81	Sep. 22	0700	4,620	7.80

Minimum daily discharge, 256 ft³/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	993	952	1430	320	3090	3330	1290	1480	2130	370	515
2	2480	944	983	1220	314	4580	5070	1290	1350	4310	353	490
3	2550	892	1110	1010	296	5680	5050	1370	1270	8480	344	410
4	2350	835	1210	934	279	6240	4300	1390	1290	5660	339	366
5	1890	792	1460	911	296	6230	3500	1300	1200	3280	331	354
6	1530	754	2410	868	314	6970	2900	1280	1110	3090	325	354
7	1370	733	2790	790	332	9190	2980	1960	1050	2240	320	362
8	1390	709	2160	725	332	7730	3270	1590	993	1900	301	359
9	1400	714	1610	708	371	4710	2790	1560	951	1310	287	335
10	1260	1540	1280	709	381	2870	2590	1430	905	1050	290	324
11	1120	3610	1250	612	376	2150	3080	1300	862	880	308	323
12	1020	5270	1230	387	380	1880	3610	1250	849	754	301	306
13	945	5100	1350	459	393	1730	3850	1420	821	675	295	294
14	888	3880	1790	590	402	1680	5830	1630	853	630	295	286
15	840	2510	1440	506	417	1720	6900	1620	864	706	288	313
16	787	1880	1150	441	447	1940	6440	1450	844	845	277	342
17	736	1630	911	448	497	2500	5900	1300	804	428	271	378
18	709	1470	871	376	578	3350	4980	1310	816	398	267	397
19	716	1400	842	376	594	3560	4140	3190	830	492	262	586
20	1590	1500	800	441	2120	3000	3560	3730	879	576	256	2960
21	3340	1650	757	536	2910	2320	3220	3180	1170	558	287	4230
22	3520	1690	733	508	3610	1890	3010	3230	1210	524	290	4320
23	2650	1420	738	503	3750	1670	2730	2330	1050	522	297	2300
24	1900	1260	822	460	3470	1550	2360	1880	953	547	297	1540
25	1560	1120	1040	402	2810	1500	2070	1660	1240	494	322	1190
26	1360	1070	1340	338	2180	1470	1850	1480	1110	462	318	1000
27	1210	996	1450	296	1770	1440	1650	1840	1500	445	463	877
28	1150	958	2870	384	1800	1320	1470	2320	1910	438	636	784
29	1270	977	2350	471	---	1330	1440	2100	1980	443	567	716
30	1170	974	1860	441	---	1380	1380	1860	2460	423	511	653
31	1070	---	1720	356	---	1670	---	1650	---	399	466	---
TOTAL	47151	49171	43279	18636	32039	98340	105250	56190	34604	45089	10534	27664
MEAN	1521	1639	1396	601	1144	3172	3508	1813	1153	1454	340	922
MAX	3520	5270	2870	1430	3750	9190	6900	3730	2460	8480	636	4320
MIN	709	709	733	296	279	1320	1380	1250	804	398	256	286
CFSM	1.44	1.56	1.32	.57	1.09	3.01	3.33	1.72	1.09	1.38	.32	.88
IN.	1.66	1.74	1.53	.66	1.13	3.47	3.71	1.98	1.22	1.59	.37	.98
AC-FT	93520	97530	85840	36960	63550	195100	208800	111500	68640	89430	20890	54870

CAL YR 1982 TOTAL 433301 MEAN 1187 MAX 5600 MIN 168 CFSM 1.13 IN 15.29 AC-FT 859500
WTR YR 1983 TOTAL 567947 MEAN 1556 MAX 9190 MIN 256 CFSM 1.48 IN 20.05 AC-FT 1127000

IOWA RIVER BASIN

05458000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in SW1/4 NE1/4 sec.21, T.95 N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft downstream from bridge on county highway B57, 2.4 mi west of Ionia, 6.4 mi upstream from mouth, and 7.5 mi downstream from Beaver Creek.

DRAINAGE AREA.--306 mi².

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage recorder. Datum of gage is 973.35 ft NGVD.

REMARKS.--Records good. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--29 years, 175 ft³/s, 7.77 in/yr, 126,800 acre-ft/yr; median of yearly mean discharges, 150 ft³/s, 6.7 in/yr, 109,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Mar. 27, 1961, gage height, 15.58 ft; minimum daily, 3.0 ft³/s Feb. 4-9, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.37 ft, discharge, 4,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 21	1700	1,590	7.44	Apr. 15	1930	2,980	9.51
Nov. 13	1130	3,470	10.11	May 7	1315	1,670	7.64
Dec. 6	1745	1,340	7.04	May 19	0915	2,220	8.49
Dec. 28	1115	2,000	8.11	May 22	1545	2,250	8.55
Feb. 21	2130	1,400	7.22	June 30	0415	1,720	7.64
Mar. 7	2245	*3,770	*10.44	July 3	0330	1,800	7.78
Mar. 18	2345	1,540	7.43	Sep. 22	0230	2,420	8.75

Minimum daily discharge, 56 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	695	391	258	422	97	825	1000	259	470	1430	92	90
2	874	349	275	354	87	1090	1100	271	405	1530	89	81
3	987	324	309	294	65	1180	1090	291	368	1720	87	72
4	805	294	315	279	70	1360	902	274	341	1140	87	68
5	523	271	642	261	79	1560	729	255	317	933	84	69
6	406	254	1250	253	84	2320	669	266	291	708	52	76
7	388	244	1110	225	85	3400	714	1030	269	503	78	68
8	385	234	744	198	86	3030	679	652	251	413	75	64
9	341	228	477	203	86	1270	602	482	237	353	72	61
10	307	749	403	210	87	719	738	396	222	307	70	59
11	279	1630	334	182	88	550	921	344	209	273	69	59
12	258	2690	245	120	90	464	900	332	210	244	68	58
13	242	3270	260	145	93	421	976	603	201	221	67	57
14	228	1730	308	176	100	413	1910	554	203	203	66	56
15	217	829	295	124	105	442	2650	465	203	191	65	61
16	202	595	269	125	123	639	2370	384	191	177	63	70
17	191	490	242	136	153	1040	1690	336	181	166	62	84
18	183	430	239	121	202	1350	1220	447	200	162	61	88
19	183	410	236	126	426	1410	957	1840	228	152	60	241
20	610	432	219	131	985	996	800	1270	251	144	57	1060
21	1470	433	207	132	1210	696	682	1000	292	136	62	1910
22	1010	398	199	127	1270	533	584	1710	294	128	67	1980
23	629	361	206	127	1170	450	504	1100	251	121	62	710
24	471	311	263	124	916	411	440	685	225	126	62	446
25	396	277	445	116	618	389	394	597	239	125	75	350
26	348	295	456	108	445	371	359	467	240	115	74	295
27	312	258	393	94	372	339	327	440	510	109	79	258
28	304	254	1720	109	462	330	301	597	843	107	92	230
29	641	268	1760	112	---	357	285	785	897	109	88	207
30	672	262	940	110	---	377	270	770	1490	104	89	188
31	473	---	569	100	---	617	---	602	---	98	90	---
TOTAL	15030	18962	15589	5344	9654	29349	26763	19504	10529	12248	2294	9116
MEAN	485	632	503	172	345	947	892	629	351	395	74.0	304
MAX	1470	3270	1760	422	1270	3400	2650	1840	1490	1720	92	1980
MIN	183	228	199	94	65	330	270	255	181	98	57	56
CFSM	1.59	2.07	1.64	.56	1.13	3.10	2.92	2.06	1.15	1.29	.24	.99
IN.	1.83	2.31	1.90	.65	1.17	3.57	3.25	2.37	1.28	1.49	.28	1.11
AC-FT	29810	37610	30920	10600	19150	58210	53080	38690	20880	24290	4550	18080
CAL YR 1982	TOTAL	135802	MEAN 372	MAX 3270	MIN 21	CFSM 1.22	IN 16.51	AC-FT 269400				
WTR YR 1983	TOTAL	174382	MEAN 478	MAX 3400	MIN 56	CFSM 1.56	IN 21.20	AC-FT 345900				

05458500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE1/4 SW1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft downstream from bridge on county highway at Janesville, 3.6 mi upstream from West Fork Cedar River, and at mile 207.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi².

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Red Cedar River at Janesville, 1905-6.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1906 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M).

GAGE.--Water-stage recorder. Datum of gage is 868.26 ft NGVD. Prior to July 26, 1919, nonrecording gage at site 1,000 ft downstream at datum 4.0 ft lower. July 26, 1919, to Sept. 30, 1927, Nov. 14, 1932, to Sept. 30, 1942, and Apr. 26, 1946, to Nov. 10, 1949, nonrecording gage at county bridge 300 ft upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi upstream. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1905-06, 1915-27, 1933-42, 1946-83), 845 ft³/s, 6.91 in/yr, 612,200 acre-ft/yr; median of yearly mean discharges, 730 ft³/s, 6.0 in/yr, 529,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,000 ft³/s Mar. 28, 1961, gage height, 16.33 ft; minimum daily, 28 ft³/s Oct. 21, 1922.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft, from floodmark at site 300 ft upstream, discharge, 34,300 ft³/s. Flood of Mar. 16, 1929, reached a stage of about 16 ft, from information by City of Waterloo, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 23	0900	4,440	4.96	Apr. 4	0730	7,040	7.12
Nov. 14	1430	8,140	7.86	Apr. 16	2200	10,500	9.18
Dec. 8	1115	4,280	4.80	May 23	1015	7,320	7.29
Dec. 30	1515	5,350	5.70	May 29	1200	4,210	4.74
Feb. 22	1215	5,590	5.96	July 5	0345	10,700	9.26
Mar. 8	2345	*12,800	*10.28	Sep. 23	1430	6,500	6.67
Mar. 20	1015	5,630	5.99				

Minimum daily discharge, 444 ft³/s Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	759	1940	1650	3360	815	2700	3020	2240	3220	5850	828	731		
2	1550	1780	1610	2850	577	3570	4300	2260	2860	5640	797	723		
3	2680	1640	1590	2510	444	5220	6230	2280	2530	6190	767	738		
4	3210	1530	1730	2100	490	6440	6910	2310	2440	8700	755	660		
5	3270	1430	2080	1870	530	7450	6180	2280	2340	9780	734	634		
6	2850	1340	3050	1780	550	8340	5350	2210	2240	6370	719	655		
7	2340	1280	3820	1650	530	10100	4660	2290	2080	4950	702	636		
8	2030	1220	4240	1430	580	12100	4360	3660	1940	4120	684	584		
9	2000	1200	3690	1370	625	12100	4600	3270	1840	3420	663	579		
10	1960	1270	2930	1410	615	8140	4520	2760	1750	2780	632	567		
11	1810	2030	2120	1330	610	5080	4390	2560	1650	2420	620	530		
12	1640	4790	2020	1010	605	3760	4640	2480	1620	2170	605	541		
13	1510	6830	1980	967	620	3180	5210	2490	1620	1950	567	518		
14	1400	8030	1480	1090	622	2840	6170	2910	1570	1750	583	505		
15	1310	6950	1950	1120	639	2770	8610	2980	1450	1580	588	509		
16	1220	4750	2180	1000	690	3170	10100	2890	1500	1420	566	537		
17	1160	3500	2230	987	777	3780	10000	2620	1430	1610	554	554		
18	1090	2920	1900	1010	1010	4170	8650	2510	1460	1390	546	638		
19	1090	2600	1820	1070	1590	4910	7400	4110	1500	1230	533	662		
20	1250	2460	1700	1050	3040	5540	6260	6770	1570	1220	514	1840		
21	1740	2450	1700	863	4750	4940	5420	6400	1990	1170	508	4050		
22	3500	2550	1510	956	5590	3960	4850	6540	2010	1000	540	5400		
23	4380	2510	1420	948	5510	3230	4470	7160	2050	1110	540	6360		
24	3860	2290	1400	915	5380	2820	4100	5690	1830	1050	548	4850		
25	2940	2100	1610	906	4960	2600	3710	4300	1690	1080	544	2980		
26	2410	1920	1900	794	4110	2480	3310	3560	1830	1010	584	2240		
27	2070	1800	2170	719	3310	2420	3000	3140	2040	961	573	1880		
28	1910	1730	3190	742	2780	2330	2730	3490	2540	925	645	1620		
29	1910	1660	4590	712	---	2220	2450	4090	3570	1020	777	1450		
30	2140	1650	5210	791	---	2220	2350	3940	4980	940	883	1340		
31	2170	---	4040	782	---	2420	---	3670	---	889	799	---		
TOTAL	65159	80150	74510	40092	52309	147000	157950	109860	63240	85695	19899	45511		
MEAN	2102	2672	2404	1293	1668	4742	5255	3544	2108	2764	642	1517		
MAX	4380	8030	5210	3360	5590	12100	10100	7160	4980	9780	883	6360		
MIN	759	1200	1400	712	444	2220	2350	2210	1430	889	508	505		
CFSM	1.27	1.61	1.45	.78	1.13	2.86	3.17	2.13	1.27	1.66	.39	.91		
IN.	1.46	1.80	1.67	.90	1.17	3.29	3.54	2.46	1.42	1.92	.45	1.02		
AC-FT	129200	159000	147800	79520	103800	291600	313300	217900	125400	170000	39470	90270		
CAL YR 1982	TOTAL	703330	MEAN	1927	MAX	9500	MIN	175	CFSM	1.16	IN	15.75	AC-FT	1395000
WTR YR 1983	TOTAL	941375	MEAN	2579	MAX	12100	MIN	444	CFSM	1.55	IN	21.08	AC-FT	1867000

IOWA RIVER BASIN

05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat 42°37'50", long 92°32'24", in SW1/4 SE1/4 sec.6, T.90 N., R.14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft downstream from bridge on county highway C55 at Finchford, 3.2 mi upstream from Shell Rock River, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--846 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 867.54 ft NGVD. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. An authorized diversion is made into Big Marsh, 16 mi upstream from gage, of 2,100 acre-ft each year between September 1 and November 15. Net effect on daily flows at gage is unknown. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years, 497 ft³/s, 7.98 in/yr, 360,100 acre-ft/yr; median of yearly mean discharges, 450 ft³/s, 7.2 in/yr, 326,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s June 27, 1951, gage height, 17.28 ft, from floodmarks; minimum daily, 5.9 ft³/s Feb. 26, 27, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft, from information by local resident, discharge, about 12,800 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 22	0200	7,320	13.28	May 10	1100	3,090	11.14
Mar. 9	0200	4,800	12.21	May 23	0600	7,680	13.44
Mar. 18	2000	2,730	10.69	July 5	1115	5,970	12.64
Apr. 4	1445	3,280	11.16	Sep. 22	2030	*8,730	*13.65
Apr. 16	1100	5,280	12.45				

Minimum daily discharge, 109 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	618	512	2220	400	1790	1850	1220	1760	1890	552	195
2	112	530	516	1800	280	1800	2230	1220	1590	2480	510	156
3	120	477	621	1430	230	1990	3000	1300	1480	3190	478	138
4	138	429	626	1160	225	2160	3310	1390	1390	4600	453	129
5	154	396	702	1010	236	2270	3200	1470	1300	5820	429	129
6	156	370	1190	922	230	2700	2840	1450	1210	5420	408	134
7	158	356	1660	850	225	3530	2560	1450	1130	4620	389	199
8	163	345	2130	802	280	4450	2390	1610	1060	3880	367	245
9	167	334	2180	750	350	4770	2360	2220	1000	2990	352	186
10	177	366	1700	700	360	3970	2380	3020	948	2310	331	157
11	195	523	1400	640	360	3400	2470	2450	889	1920	317	143
12	193	1180	1190	578	366	2530	2540	2010	861	1660	300	136
13	187	1550	875	540	380	1940	2820	1830	854	1460	286	131
14	177	1890	910	590	401	1710	3440	1770	811	1310	278	123
15	168	1890	962	530	450	1630	4560	1900	852	1190	272	131
16	156	1420	981	490	597	1920	5330	1880	1000	1090	261	141
17	149	1150	890	475	954	2430	5010	1680	979	996	247	156
18	142	991	921	460	1450	2670	4530	1600	958	927	282	161
19	141	914	813	470	2290	2680	4020	3600	1210	926	233	218
20	185	881	743	500	3680	2540	3510	4180	1630	925	222	704
21	510	852	690	530	5810	2310	3030	7090	2030	838	208	2090
22	812	807	661	520	7230	1990	2680	7320	2220	760	212	7370
23	701	749	656	506	6720	1720	2440	7040	2320	872	247	7940
24	600	668	714	488	5610	1550	2200	5130	2310	1170	230	5760
25	532	591	917	471	4640	1450	1970	3990	2190	1060	165	4080
26	485	570	1160	446	3640	1400	1770	3220	1740	861	147	2830
27	445	540	1330	331	2860	1350	1600	2640	1520	747	155	2020
28	463	520	1800	404	2130	1270	1480	2250	1430	677	172	1610
29	533	505	2070	471	---	1280	1370	2080	1600	700	181	1370
30	667	505	2200	555	---	1330	1280	1990	1680	674	192	1210
31	630	---	2380	470	---	1510	---	1930	---	607	194	---
TOTAL	9525	22917	36100	22109	52384	70040	84170	83920	41952	58570	9070	39992
MEAN	307	764	1165	713	1871	2259	2806	2707	1398	1889	293	1333
MAX	812	1890	2380	2220	7230	4770	5330	7320	2320	5820	552	7940
MIN	109	334	512	331	225	1270	1280	1220	811	607	147	123
CFSM	.36	.90	1.38	.84	2.21	2.67	3.32	3.20	1.65	2.23	.35	1.58
IN.	.42	1.01	1.59	.97	2.30	3.08	3.70	3.69	1.84	2.58	.40	1.76
AC-FT	18890	45460	71600	43850	103900	138900	167000	166500	83210	116200	17990	79320

CAL YR 1982 TOTAL 332151 MEAN 910 MAX 7860 MIN 64 CFSM 1.08 IN 14.61 AC-FT 658800
WTR YR 1983 TOTAL 530749 MEAN 1454 MAX 7940 MIN 109 CFSM 1.72 IN 23.34 AC-FT 1053000

05459000 SHELL ROCK RIVER NEAR NORTHWOOD, IA

LOCATION.--Lat 43°24'51", long 93°13'14", in NW1/4 NW1/4 sec.9, T.99 N., R.20 W., Worth County, Hydrologic Unit 07080202, on right bank 50 ft downstream from bridge on county highway A27, 1.3 mi downstream from Drainage ditch 2, 2.0 mi south of Northwood, 3.7 mi upstream from Elk Creek, and 84.5 mi upstream from mouth.

DRAINAGE AREA.--300 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1948 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,176.48 ft NGVD. Prior to May 17, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--38 years, 155 ft³/s, 7.02 in/yr, 112,300 acre-ft/yr; median of yearly mean discharges, 140 ft³/s, 6.3 in/yr, 101,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft³/s Apr. 8, 1955, gage height, 12.07 ft, backwater from ice; no flow Jan. 14-19, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 21	0800	731	6.69	Mar. 7	0800	*1,890	*8.99
Nov. 13	1345	849	7.00	Apr. 16	0315	1,420	8.22
Feb. 21	1445	1,080	7.38	July 2	0815	893	7.27
Feb. 22	2400	1,050	7.30				

Minimum daily discharge, 27 ft³/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	493	333	373	381	135	962	991	662	284	717	130	45
2	523	317	390	351	120	1080	1090	650	266	863	195	41
3	509	307	398	331	86	1190	1110	642	254	800	160	38
4	479	306	385	310	86	1320	1100	599	257	806	135	35
5	448	285	431	293	99	1400	1060	562	245	831	130	38
6	432	260	586	281	98	1590	1040	548	236	806	120	49
7	500	240	566	267	105	1870	1080	582	222	756	110	49
8	498	230	497	265	114	1600	1040	648	200	689	92	45
9	457	253	435	245	116	1300	996	594	190	615	68	42
10	421	556	380	239	115	1100	992	540	189	543	62	45
11	401	675	400	182	114	940	1040	503	179	465	58	46
12	379	788	426	150	113	840	1040	490	172	395	57	42
13	355	791	416	195	116	780	1190	562	168	337	50	40
14	334	708	352	202	125	730	1370	574	187	286	47	37
15	311	662	323	160	140	700	1390	525	215	250	43	43
16	295	636	296	190	170	800	1410	479	209	221	37	54
17	271	600	286	178	230	880	1380	442	190	198	31	61
18	250	564	278	166	320	955	1340	433	193	190	29	50
19	262	577	266	170	457	932	1310	528	196	187	29	163
20	586	617	254	170	835	848	1310	592	260	170	27	422
21	722	579	246	165	990	751	1330	564	438	156	34	302
22	653	537	241	160	865	682	1330	532	336	140	34	217
23	585	514	238	155	805	627	1270	497	277	130	29	187
24	540	414	264	145	726	589	1180	447	248	116	30	162
25	503	410	411	135	662	555	1090	410	228	102	34	139
26	471	418	436	125	620	528	1000	374	209	92	38	130
27	440	396	385	115	598	501	927	347	224	84	39	117
28	409	378	487	130	759	516	855	330	266	81	38	107
29	396	380	529	150	---	490	797	327	286	81	36	99
30	377	371	475	145	---	479	735	325	597	76	48	94
31	353	---	419	140	---	652	---	306	---	69	49	---
TOTAL	13653	14102	11869	6281	9719	28187	33793	15614	7420	11252	2019	2939
MEAN	440	470	383	203	347	909	1126	504	247	363	65.1	98.0
MAX	722	791	586	381	990	1870	1410	662	597	863	195	422
MIN	250	230	238	115	86	479	735	306	168	69	27	35
CFSM	1.47	1.57	1.28	.68	1.16	3.03	3.75	1.68	.82	1.21	.22	.33
IN.	1.69	1.75	1.47	.78	1.21	3.50	4.19	1.94	.92	1.40	.25	.36
AC-FT	27080	27970	23540	12460	19280	55910	67030	30970	14720	22320	4000	5830
CAL YR 1982	TOTAL	123122	MEAN 337	MAX 1500	MIN 32	CFSM 1.12	IN 15.27	AC-FT 244200				
WTR YR 1983	TOTAL	156848	MEAN 430	MAX 1870	MIN 27	CFSM 1.43	IN 19.45	AC-FT 311100				

IOWA RIVER BASIN

05459500 WINNEBAGO RIVER AT MASON CITY, IA

LOCATION.--Lat 43°09'54", long 93°11'33", in NE1/4 NW1/4 sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft upstream from Thirteenth Street Bridge in Mason City, 0.1 mi downstream from Calmus Creek, and 1.0 mi upstream from Willow Creek, and at mile 275.8 above mouth of Iowa River.

DRAINAGE AREA.--526 mi².

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

REVISED RECORDS.--WSP 825: 1935-36. WSP 1438: Drainage area. WSP 1558: 1933-37, 1943 (M), 1945, 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,069.59 ft NGVD. Prior to Oct. 15, 1934, nonrecording gage at datum 6.47 ft lower. Oct. 15 to Nov. 6, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--51 years, 259 ft³/s, 6.69 in/yr, 187,500 acre-ft/yr; median of yearly mean discharges, 220 ft³/s, 5.7 in/yr, 159,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Mar. 30, 1933, gage height, 15.7 ft, present datum; minimum daily, 2.5 ft³/s Dec. 29-31, 1933, Aug. 5, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	0100	2,240	7.07	July 1	2030	2,890	7.91
Mar. 7	0200	*3,690	*8.88	Sep. 20	0815	2,250	7.13
Apr. 14	1145	2,460	7.35				

Minimum daily discharge, 99 ft³/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	497	563	774	237	1890	1590	894	741	2800	225	181
2	1020	474	608	759	208	1990	1680	947	563	2500	213	159
3	936	449	634	694	148	2130	1640	975	620	2290	209	142
4	828	423	623	631	149	2230	1570	926	577	2100	205	134
5	740	399	844	570	171	2320	1510	879	537	1770	189	131
6	680	384	1290	537	169	3010	1520	871	504	1550	173	131
7	682	377	1130	476	183	3410	1600	900	480	1400	158	125
8	644	360	983	443	201	2720	1480	901	461	1260	147	122
9	613	387	813	446	203	2010	1420	841	444	1130	138	116
10	590	980	737	453	202	1730	1450	789	428	1030	134	112
11	562	1190	605	353	198	1580	1600	752	413	927	128	112
12	539	1550	560	243	197	1490	1560	771	405	837	125	110
13	515	1330	597	357	202	1410	1980	841	391	751	121	108
14	492	1190	611	387	217	1320	2350	780	445	662	119	103
15	465	1090	619	276	241	1280	2360	729	530	594	115	127
16	433	1080	577	332	313	1590	2270	689	551	546	112	152
17	412	984	535	316	457	1850	2190	662	540	501	109	166
18	392	927	523	292	623	1930	2070	680	568	480	107	178
19	430	925	499	292	1040	1740	2000	1090	673	478	104	630
20	898	974	461	294	1820	1510	1970	1080	1020	436	99	2070
21	937	919	436	291	1950	1340	1890	1000	1910	399	130	1360
22	862	863	422	277	2160	1190	1770	929	1600	363	133	923
23	813	804	433	280	2070	1100	1640	845	1340	380	120	701
24	760	695	529	268	1710	1030	1520	776	1250	339	151	551
25	712	683	888	250	1410	982	1400	718	1570	321	485	454
26	675	700	1040	224	1290	932	1280	672	1140	303	361	390
27	643	503	977	209	1280	859	1170	709	1600	285	287	347
28	625	617	1250	239	1570	874	1080	724	1610	277	230	314
29	599	587	980	261	---	840	1000	882	1700	275	194	295
30	560	565	863	256	---	845	941	850	2720	257	179	268
31	524	---	804	245	---	1140	---	807	---	241	193	---
TOTAL	20611	23006	22434	11725	20619	50272	49501	25909	27431	27582	5393	10712
MEAN	665	767	724	378	736	1622	1650	836	914	890	174	357
MAX	1030	1550	1290	774	2160	3410	2360	1090	2720	2800	485	2070
MIN	392	360	422	209	148	840	941	562	391	241	99	103
CFSM	1.26	1.46	1.38	.72	1.40	3.08	3.14	1.59	1.74	1.69	.33	.68
IN.	1.46	1.63	1.59	.83	1.46	3.56	3.50	1.83	1.94	1.95	.38	.76
AC-FT	40880	45630	44500	23260	40900	99710	98190	51390	54410	54710	10700	21250

CAL YR 1982	TOTAL	193349	MEAN 530	MAX 3200	MIN 29	CFSM 1.01	IN 13.67	AC-FT 383500
WTR YR 1983	TOTAL	295195	MEAN 809	MAX 3410	MIN 99	CFSM 1.54	IN 20.88	AC-FT 585500

IOWA RIVER BASIN

79

05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat 43°08'01", long 93°22'57", in SE1/4 NE1/4 sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi².

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft NGVD, and 4.60 ft below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft long at elevation 1,226.84 ft NGVD. Dam constructed in 1903. A previous outlet works had been constructed in 1887. Lake is used for conservation and recreation. Area of lake is approximately 3,600 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft July 3, 1951; minimum observed, 1.16 ft Dec. 20, 22-24, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.38 ft Apr. 14; minimum, 4.11 ft Sept. 15.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.44	4.43	4.70	5.02	4.86	5.03	5.17	5.00	4.92	5.16	4.64	4.37
2	4.49	4.44	4.73	5.01	4.93	5.04	5.17	5.07	4.90	5.18	4.62	4.35
3	4.48	4.46	4.74	4.99	4.95	5.05	5.18	5.08	4.91	5.22	4.62	4.34
4	4.47	4.43	4.73	4.99	4.94	5.05	5.16	5.08	4.89	5.21	4.60	4.31
5	4.46	4.40	4.83	4.99	4.93	5.08	5.15	5.05	4.88	5.14	4.59	4.30
6	4.49	4.39	4.90	4.99	4.93	5.18	5.18	5.03	4.87	5.11	4.58	4.31
7	4.49	4.39	4.90	4.98	4.92	5.24	5.17	5.03	4.84	5.09	4.57	4.26
8	4.44	4.36	4.90	4.97	4.91	5.24	5.14	5.02	4.84	5.08	4.56	4.24
9	4.45	4.40	4.90	4.96	4.90	5.22	5.15	5.00	4.82	5.04	4.53	4.24
10	4.47	4.51	4.90	4.99	4.90	5.20	5.19	4.98	4.81	5.03	4.54	4.23
11	4.47	4.55	4.90	4.99	4.90	5.19	5.16	4.95	4.79	4.99	4.48	4.20
12	4.45	4.66	4.89	4.97	4.88	5.18	5.12	4.96	4.78	4.96	4.46	4.17
13	4.43	4.58	4.89	4.97	4.88	5.17	5.23	4.97	4.78	4.94	4.45	4.15
14	4.44	4.58	4.88	4.96	4.87	5.15	5.33	4.95	4.86	4.92	4.43	4.14
15	4.42	4.59	4.88	4.95	4.91	5.18	5.33	4.93	4.87	4.89	4.42	4.18
16	4.40	4.59	4.88	4.93	4.92	5.25	5.30	4.91	4.84	4.88	4.40	4.21
17	4.40	4.59	4.88	4.92	4.92	5.25	5.26	4.89	4.81	4.85	4.41	4.20
18	4.39	4.59	4.87	4.91	4.93	5.25	5.25	4.89	4.86	4.85	4.38	4.25
19	4.40	4.61	4.86	4.90	5.00	5.22	5.23	4.99	4.90	4.87	4.38	4.37
20	4.51	4.66	4.85	4.89	4.95	5.22	5.22	4.99	4.95	4.85	4.37	4.68
21	4.46	4.62	4.85	4.88	4.96	5.22	5.21	4.97	5.04	4.84	4.40	4.67
22	4.46	4.63	4.83	4.87	4.98	5.20	5.20	4.98	5.04	4.81	4.40	4.65
23	4.45	4.65	4.83	4.87	5.00	5.18	5.18	4.94	5.01	4.80	4.38	4.64
24	4.45	4.65	4.86	4.87	5.02	5.17	5.18	4.93	4.97	4.77	4.36	4.63
25	4.44	4.63	4.89	4.86	5.02	5.14	5.16	4.90	4.99	4.74	4.37	4.62
26	4.43	4.63	4.89	4.85	5.03	5.10	5.16	4.89	4.97	4.72	4.39	4.63
27	4.41	4.63	4.90	4.85	5.03	5.15	5.12	4.93	4.97	4.69	4.41	4.64
28	4.44	4.66	5.04	4.85	5.02	5.16	5.10	4.96	4.95	4.68	4.40	4.63
29	4.50	4.67	5.04	4.90	---	5.15	5.08	4.98	5.02	4.69	4.39	4.63
30	4.43	4.69	5.03	4.88	---	5.14	5.06	4.95	5.13	4.68	4.39	4.63
31	4.43	---	5.02	4.87	---	5.16	---	4.93	---	4.67	4.38	---
MEAN	4.45	4.56	4.88	4.93	4.94	5.17	5.18	4.97	4.91	4.91	4.46	4.40
MAX	4.51	4.69	5.04	5.02	5.03	5.25	5.33	5.08	5.13	5.22	4.64	4.68
MIN	4.39	4.36	4.70	4.85	4.86	5.03	5.06	4.89	4.78	4.67	4.36	4.14
WTR YR 1983	MEAN	4.81	MAX	5.33	MIN	4.14						

IOWA RIVER BASIN

05462000 SHELL ROCK RIVER AT SHELL ROCK, IA

Location.--Lat 42°39'10", long 92°35'45", in NE1/4 NW1/4 sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202, on right bank 400 ft upstream from bridge on county highway C45 in Shell Rock, 2.2 mi downstream from Curry Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--1,746 mi².

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft NGVD.

REMARKS.--Records good. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--30 years, 974 ft³/s, 7.58 in/yr, 705,700 acre-ft/yr; median of yearly mean discharges, 830 ft³/s, 6.5 in/yr, 601,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s Mar. 28, 1951, gage height, 15.26 ft; minimum daily, 38 ft³/s Feb. 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft at bridge 400 ft downstream, from information furnished by Corps of Engineers, discharge, about 45,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 13	0645	5,370	10.38	May 8	1045	4,200	9.80
Dec. 7	0400	4,320	9.87	May 20	1045	8,240	11.52
Dec. 29	0145	4,560	9.99	June 22	0900	4,630	10.00
Feb. 21	0500	7,250	11.16	June 25	2400	4,440	9.91
Mar. 8	0745	9,620	12.02	July 2	1645	7,150	11.11
Mar. 19	0330	5,870	10.60	Sep. 21	0845	*10,100	*12.24
Apr. 15	1430	8,150	11.50				

Minimum daily discharge, 438 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1050	1560	1780	2900	882	4120	4100	3080	2810	5880	959	585		
2	2130	1480	1780	2500	656	4930	5090	3020	2610	6980	906	575		
3	2280	1410	1880	2320	516	5220	5590	3090	2440	6760	866	540		
4	2140	1320	1930	2090	565	5510	5390	3100	2300	6510	849	512		
5	1950	1270	2110	2050	620	5900	4940	2960	2170	5800	824	498		
6	1780	1210	3620	1920	643	6660	4700	2850	2070	4760	799	570		
7	1690	1160	4190	1810	624	8490	4770	3240	1970	4190	753	536		
8	1700	1120	3600	1590	685	9430	4780	4090	1880	3780	693	504		
9	1700	1090	3030	1550	743	7950	4520	3530	1820	3440	656	490		
10	1610	1270	2450	1630	735	6070	4520	3150	1730	3150	628	475		
11	1520	2850	2280	1580	727	5150	4930	2900	1660	2890	614	459		
12	1440	4400	1910	1270	725	4700	5250	2820	1640	2670	597	451		
13	1380	5210	1850	978	746	4320	5410	2910	1570	2440	586	445		
14	1320	4320	2030	1240	766	4050	6670	3150	1560	2230	578	438		
15	1270	3640	2230	1340	813	3930	8000	3050	1680	2040	559	453		
16	1190	3250	2110	1040	986	4480	7980	2820	1780	1880	541	497		
17	1120	3080	1900	1020	1310	5190	7770	2610	1760	1740	535	536		
18	1080	2850	1810	1000	2020	5670	7120	2610	1830	1690	533	764		
19	1040	2720	1780	1080	3430	5740	6520	6050	2170	1700	522	851		
20	1350	2740	1680	1160	6360	5140	6100	7960	2450	1610	500	6160		
21	2510	2800	1570	1140	7040	4470	5830	6040	3550	1490	491	9710		
22	2600	2680	1520	1110	6710	3920	5570	6090	4520	1400	545	5850		
23	2390	2510	1500	1030	6500	3550	5290	5470	3930	1460	545	3300		
24	2200	2240	1570	1010	5730	3300	4950	4180	3320	1670	525	2460		
25	2040	1950	1930	950	4550	3140	4600	3650	3520	1380	543	2040		
26	1900	2030	2610	847	3740	3030	4300	3220	3810	1270	1040	1740		
27	1790	1980	2780	685	3340	2900	3980	3010	3240	1180	920	1550		
28	1730	1870	3680	839	3310	2740	3680	3510	4320	1130	782	1420		
29	1770	1930	4280	940	---	2780	3450	3570	4470	1120	674	1310		
30	1740	1850	3300	1040	---	2760	3240	3260	4630	1080	650	1210		
31	1640	---	3120	959	---	2990	---	3030	---	1020	596	---		
TOTAL	53050	69790	73810	42618	65472	148230	159050	114020	79210	86340	20809	46929		
MEAN	1711	2326	2381	1375	2338	4782	5302	3678	2640	2785	671	1564		
MAX	2600	5210	4280	2900	7040	9430	8000	7950	4630	6980	1040	9710		
MIN	1040	1090	1500	685	516	2740	3240	2610	1560	1020	491	438		
CFSM	.98	1.33	1.36	.79	1.34	2.74	3.04	2.11	1.51	1.60	.38	.90		
IN.	1.13	1.49	1.57	.91	1.39	3.16	3.39	2.43	1.69	1.84	.44	1.00		
AC-FT	105200	138400	146400	845300	129900	294000	315500	226200	157100	171300	41270	93080		
CAL YR 1982	TOTAL	649349	MEAN	1779	MAX	8320	MIN	185	CFSM	1.02	IN	13.83	AC-FT	1288000
WTR YR 1983	TOTAL	959328	MEAN	2628	MAX	9710	MIN	438	CFSM	1.51	IN	20.44	AC-FT	1903000

05463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°30'50", long 92°37'55", in SE1/4 SE1/4 sec.28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on downstream side of center bridge pier of bridge on county highway T55, 0.2 mi north of New Hartford, and 8 mi upstream from mouth.

DRAINAGE AREA.--347 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 882.44 ft NGVD. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period and periods of no gage-height record, Oct. 1-19, Mar. 19 to Apr. 3 and Aug. 10 to Sep. 12, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years, 199 ft³/s, 7.79 in/yr, 144,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s June 13, 1947, gage height, 13.5 ft, from graph based on gage readings, from rating curve extended above 14,000 ft³/s; minimum daily, 2.3 ft³/s Jan. 20-24, 1956, Jan. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 13	0700	1,940	8.65	Apr. 15	1130	3,170	9.59
Dec. 6	2330	1,470	8.14	May 20	0330	*7,430	*11.56
Dec. 29	0915	1,790	8.50	May 23	0200	5,190	10.71
Feb. 20	unknown	3,930	10.05	May 29	1130	2,490	9.08
Mar. 7	1030	2,480	9.12	July 2	2145	2,040	8.68
Apr. 3	unknown	2,410	9.02	July 5	0645	2,280	8.91

Minimum daily discharge, 52 ft³/s Sept. 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	264	228	580	128	458	1420	443	739	922	217	73
2	88	375	235	490	126	491	1530	498	679	1760	195	70
3	94	300	234	430	118	513	2160	609	639	1600	182	67
4	91	254	224	370	112	547	1960	706	593	1610	172	64
5	88	227	359	355	110	601	1310	614	549	2080	165	64
6	85	209	1200	340	103	1080	1170	570	519	1070	159	78
7	92	199	1240	300	96	2350	1220	690	490	757	156	72
8	89	188	779	270	114	1580	1020	815	468	644	144	58
9	99	187	583	260	140	914	914	700	447	566	137	56
10	89	233	500	270	150	663	1170	618	427	504	130	54
11	93	350	400	245	154	545	1350	564	407	453	126	55
12	88	1280	350	185	158	487	1320	593	403	406	121	52
13	83	1710	435	230	165	466	1730	636	405	369	116	52
14	91	802	425	215	190	468	2570	654	390	341	113	52
15	85	563	370	200	245	491	3050	685	412	317	109	57
16	82	469	323	180	590	800	2130	617	383	298	104	65
17	80	414	304	168	1170	1180	1510	560	362	278	97	61
18	78	375	304	155	1520	942	1200	564	394	266	89	57
19	76	359	293	158	2000	786	986	3660	1040	272	86	61
20	122	361	279	162	2750	720	868	5900	1090	250	80	259
21	333	334	269	170	2520	660	787	2700	744	232	78	422
22	280	306	263	162	1570	610	726	2860	628	217	76	242
23	223	290	266	160	1170	580	675	4430	549	267	75	179
24	193	270	354	155	816	560	621	2110	492	240	74	152
25	172	262	624	148	625	550	583	1380	455	218	76	136
26	158	259	578	130	509	540	553	1090	426	204	78	125
27	148	236	489	132	451	475	517	913	433	191	84	117
28	150	241	1180	163	432	570	489	976	422	183	91	110
29	217	243	1380	160	---	600	472	2060	450	250	80	104
30	282	230	800	148	---	630	453	1120	719	370	82	100
31	233	---	680	135	---	930	---	841	---	255	80	---
TOTAL	4174	11790	15948	7226	18232	22787	36464	41276	16154	17390	3572	3114
MEAN	135	393	514	233	651	735	1215	1331	538	561	115	104
MAX	333	1710	1380	580	2750	2350	3050	5900	1090	2080	217	422
MIN	76	187	224	130	96	458	453	443	362	183	74	52
CFSM	.39	1.13	1.48	.67	1.88	2.12	3.60	3.84	1.55	1.62	.33	.30
IN.	.45	1.26	1.71	.77	1.95	2.44	3.91	4.42	1.73	1.86	.38	.33
AC-FT	8280	23390	31630	14330	36160	45200	72330	81870	32040	34490	7090	6180
CAL YR 1982	TOTAL	134109	MEAN 367	MAX 3590	MIN 15	CFSM 1.06	IN 14.38	AC-FT 266000				
WTR YR 1983	TOTAL	198127	MEAN 543	MAX 5900	MIN 52	CFSM 1.57	IN 21.24	AC-FT 393000				

IOWA RIVER BASIN

05463500 BLACK HAWK CREEK AT HUDSON, IA

LOCATION.--Lat 42°24'28", long 92°27'47", in SW1/4 NE1/4 sec.27, T.88 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, on left bank 35 ft downstream from bridge on State Highway 58, 0.2 mi northwest of Chicago and Great Western Railway tracks at the west edge of Hudson, 4.5 mi upstream from Prescotts Creek, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 865.03 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years, 168 ft³/s, 7.53 in/yr, 121,700 acre-ft/yr; median of yearly mean discharges, 150 ft³/s, 6.7 in/yr, 109,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s July 9, 1969, gage height, 18.23 ft; minimum daily, 0.12 ft³/s Jan. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 13	1130	1,370	11.98	May 20	0515	*4,340	*15.58
Dec. 29	0545	1,290	11.69	May 23	1700	2,490	14.37
Feb. 20	1415	2,630	14.55	May 29	1915	1,690	12.85
Mar. 7	2030	1,550	12.56	July 2	1745	1,460	12.24
Apr. 3	2315	1,680	12.85	July 4	2400	1,210	11.37
Apr. 15	1730	1,860	13.25				

Minimum daily discharge, 30 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES													
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	30	159	172	445	75	343	982	371	624	911	115	46		
2	31	158	176	360	73	352	1060	415	588	1400	110	44		
3	33	126	175	300	69	363	1540	514	565	1090	103	42		
4	31	110	167	260	64	387	1380	644	536	1060	99	40		
5	31	99	308	245	64	423	910	551	508	876	95	41		
6	32	94	996	230	59	750	838	507	488	621	92	57		
7	37	90	832	200	55	1420	810	576	463	549	97	52		
8	36	83	598	170	67	1210	708	631	444	495	90	43		
9	48	93	503	165	82	678	695	543	428	449	83	41		
10	57	175	429	170	88	546	891	492	409	410	79	39		
11	51	251	348	143	91	476	982	453	392	373	76	40		
12	45	984	299	107	93	437	884	480	404	337	73	38		
13	43	1260	375	135	98	420	1110	548	386	310	71	38		
14	41	633	364	122	108	416	1390	531	369	286	69	37		
15	40	480	297	112	142	422	1770	505	356	265	67	43		
16	38	414	271	104	370	504	1270	469	336	250	64	52		
17	37	360	259	97	800	665	872	435	324	227	60	48		
18	37	324	265	90	1130	584	747	445	353	213	56	43		
19	38	304	249	93	1680	525	673	1350	624	215	54	50		
20	49	300	234	96	2560	475	616	3830	532	199	51	96		
21	74	273	224	100	1940	443	578	1740	460	179	50	145		
22	77	249	222	95	890	410	548	1310	412	164	50	101		
23	66	234	222	94	648	386	521	2150	375	154	49	81		
24	59	197	312	90	543	377	487	1420	350	149	49	74		
25	55	223	503	86	455	371	465	943	332	144	50	69		
26	51	202	443	76	395	367	447	786	313	135	50	65		
27	50	180	399	77	358	316	424	721	348	126	53	61		
28	59	191	931	95	340	383	407	841	394	120	57	58		
29	150	190	1160	94	---	410	394	1480	446	149	50	55		
30	152	175	668	85	---	415	380	938	679	144	51	52		
31	108	---	553	77	---	640	---	687	---	125	50	---		
TOTAL	1686	8611	12954	4613	13337	15914	24779	27306	13238	12125	2163	1691		
MEAN	54.4	287	418	149	476	513	826	881	441	391	69.8	56.4		
MAX	152	1260	1160	445	2560	1420	1770	3830	679	1400	115	145		
MIN	30	83	167	76	55	316	380	371	313	120	49	37		
CFSM	.18	.95	1.38	.49	1.57	1.69	2.73	2.91	1.46	1.29	.23	.19		
IN.	.21	1.05	1.59	.57	1.64	1.95	3.04	3.35	1.63	1.49	.27	.21		
AC-FT	3340	17080	25690	9150	26450	31570	49150	54160	26260	24050	4290	3350		
CAL YR 1982	TOTAL	98772.6	MEAN	271	MAX	3530	MIN	5.4	CFSM	.89	IN	12.13	AC-FT	195900
WTR YR 1983	TOTAL	138417.0	MEAN	379	MAX	3830	MIN	30	CFSM	1.25	IN	16.99	AC-FT	274600

05454000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat 42°29'44", long 92°20'03", in NW1/4 NW1/4 sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi upstream from Eleventh Avenue bridge in Waterloo, 1.1 mi downstream from Black Hawk Creek, and at mile 187.9 above mouth of Iowa River.

DRAINAGE AREA.--5,146 mi².

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage recorder. Datum of gage is 824.14 ft NGVD.

REMARKS.--Records good except those for January, which are fair. Slight diurnal fluctuation during low flow caused by powerplant above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--43 years, 2,984 ft³/s, 7.87 in/yr, 2,162,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,700 ft³/s Mar. 29, 1961, gage height, 21.86 ft; minimum daily, 152 ft³/s Jan. 28, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft, determined by Corps of Engineers, from information by City of Waterloo, discharge, 85,000 ft³/s. Flood of Apr. 2, 1933, reached a stage of about 19.5 ft from information by City of Waterloo, discharge, 61,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1345	15,500	10.01	Apr. 16	1915	25,700	12.90
Feb. 22	0845	20,300	11.32	May 21	0115	26,500	13.17
Mar. 9	0945	*27,200	*13.40	July 5	2215	22,700	12.02
Mar. 20	1600	14,500	9.65	Sep. 23	1200	17,200	10.41
Apr. 4	1845	18,800	10.91				

Minimum daily discharge, 1,220 ft³/s Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1870	6170	4850	9830	2100	9300	9840	7880	9940	13600	3180	2160		
2	2990	4960	4730	8720	1650	10100	12400	7790	9060	15600	3090	2070		
3	5010	4670	4730	7480	1300	11800	15300	8070	8320	17200	2970	2010		
4	5710	4320	4900	6720	1220	13600	18300	8410	7820	18500	2860	1920		
5	5910	4020	5570	6210	1420	15200	17900	8310	7390	21500	2710	1850		
6	5620	3780	7760	5910	1700	17600	15900	8120	7070	21200	2650	1920		
7	4990	3590	10500	5580	1600	20800	14400	8100	6680	16500	2600	1950		
8	4570	3180	11300	5140	1650	25200	13500	9390	6370	13900	2490	1890		
9	4570	3390	10600	4770	1970	27000	13300	10700	6210	11900	2370	1830		
10	4460	3450	9110	4400	2110	23900	13500	10100	5870	10300	2260	1760		
11	4330	4970	7260	3250	2130	17500	13600	9730	5590	8920	2210	1680		
12	4070	9120	5960	2700	2180	13500	14100	9020	5500	7880	2130	1630		
13	3770	12900	5330	2880	2290	11500	14900	8590	5410	7300	2020	1600		
14	3520	15400	6550	2890	2550	10400	16900	8820	5230	6680	1970	1580		
15	3340	14900	5910	2700	2640	9880	20600	9190	5230	6090	1940	1620		
16	3150	12400	6220	2700	3150	10200	25000	9100	5230	5650	1790	1640		
17	3000	9740	6980	2520	4420	11900	25200	8480	5380	5440	1810	1700		
18	2890	8300	5740	2020	6240	13200	23300	8150	5440	5230	1930	1850		
19	2770	7610	5470	2210	9280	13900	20700	11100	6090	4990	1910	2310		
20	3000	7100	5230	2650	13800	14400	18200	20700	7200	4870	1850	4270		
21	4070	6940	4900	3000	18500	13800	16200	25500	7850	4600	1790	10200		
22	6460	6830	4720	3150	20200	12100	14700	22400	9060	4030	1780	14900		
23	7690	6750	4540	3180	19500	10600	13700	23200	9490	4230	1890	17100		
24	7620	6360	4650	3130	18400	9490	12700	23300	8920	4630	1880	15400		
25	6680	5780	5270	2950	16500	8790	11800	16500	8220	4660	1860	11400		
26	5780	5430	6290	2570	13800	8420	10900	13200	8480	4230	2010	8650		
27	5380	5340	7140	2020	11600	8180	10100	11400	8120	3940	2430	6880		
28	5050	6160	8820	2110	10000	7790	9380	10600	8250	3650	2220	5950		
29	4980	5070	11000	2620	---	7720	8680	11700	10100	4100	2250	5200		
30	5220	4980	12200	2650	---	7790	8170	12500	11500	3900	2400	4830		
31	6360	---	11400	2640	---	8320	---	10900	---	3650	2280	---		
TOTAL	143830	201610	213630	121200	193900	403880	453170	370950	221020	268870	69530	139760		
MEAN	4640	6717	6891	3910	6926	13030	15110	11970	7367	8673	2243	4658		
MAX	7690	15400	12200	9830	20200	27000	25200	25500	11500	21500	3180	17100		
MIN	1870	3180	4540	2020	1220	7720	8170	7790	5230	3650	1780	1680		
CFSM	.90	1.31	1.34	.76	1.35	2.53	2.94	2.33	1.43	1.69	.44	.91		
IN.	1.04	1.46	1.54	.88	1.40	2.92	3.28	2.68	1.60	1.94	.50	1.01		
AC-FT	285300	399700	423700	240400	384600	801100	898900	735800	438400	533300	137900	277200		
CAL YR 1982	TOTAL	1979567	MEAN	5423	MAX	26900	MIN	530	CFSM	1.05	IN	14.31	AC-FT	3926000
WTR YR 1983	TOTAL	2801240	MEAN	7675	MAX	27000	MIN	1220	CFSM	1.49	IN	20.25	AC-FT	5556000

IOWA RIVER BASIN

05464500 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°58'14", long 91°40'01", in SE1/4 NW1/4 sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi upstream from Prairie Creek, and at mile 112.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi².

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1924. WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage recorder. Datum of gage is 700.47 ft NGVD. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--81 years, 3,414 ft³/s, 7.12 in/yr, 2,473,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s Mar. 31, 1961, gage height, 19.66 ft; maximum gage height, 20.0 ft Mar. 18, 1929; minimum discharge, 53 ft³/s Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 ft³/s Dec. 10, 1949.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1851 reached a stage of about 20 ft, discharge, 65,000 ft³/s, estimated.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 17	1000	17,700	7.80	Apr. 6	1200	22,800	9.02
Dec. 6	0915	14,100	6.96	Apr. 19	1415	*31,700	*11.09
Jan. 1	2215	14,700	7.10	May 13	0345	13,800	6.88
Feb. 20	1500	25,200	9.59	May 23	1830	31,000	10.92
Feb. 24	2030	22,500	8.96	July 8	0800	25,500	9.65
Mar. 11	1730	30,400	10.79	Sept. 26	1145	16,600	7.56
Mar. 22	2300	16,400	7.49				

Minimum daily discharge, 1,780 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2470	7160	5820	14400	3600	14000	10800	10600	15000	14300	3920	2400
2	2420	9680	5980	14100	3200	11800	13100	10600	13600	17600	3690	2310
3	2580	7830	5940	12100	2850	11100	16400	11200	12200	19600	3450	2200
4	4000	6400	5780	10300	2530	11800	17500	11400	11000	20900	3370	2110
5	5170	5440	7370	9090	2300	13200	19500	11500	9990	22100	3250	2060
6	5710	5080	11900	8130	2150	15200	21600	11400	9430	23300	3140	2220
7	5640	4750	11700	7410	2650	17400	22200	11200	8750	24400	3050	2200
8	5360	4510	12400	6920	2800	19600	20500	11200	8330	25200	2960	2100
9	5530	4390	13400	6290	2580	22300	18700	11100	7860	22400	2850	2080
10	5650	4300	14000	5980	2680	26000	18000	12100	7490	18200	2620	2050
11	4990	4840	13000	5740	2990	29800	17800	12700	7010	14900	2640	1990
12	4700	10700	10700	5380	3150	28900	18000	12700	6670	12300	2560	1910
13	4450	12800	8670	4950	3230	22700	18500	12600	6430	10300	2480	1820
14	4120	13500	7580	4560	3500	17500	19500	11700	6270	8990	2430	1780
15	3990	14800	7500	4030	3770	14500	20700	11100	6060	8120	2350	1860
16	3790	16700	7330	3680	4490	12900	22000	11400	5870	7220	2300	1890
17	3600	17500	7540	3800	5870	12300	24100	11400	5800	6600	2220	1890
18	3450	15900	7450	3550	7450	12600	28500	11200	5990	6150	2130	1860
19	3340	12400	7080	3700	9520	13800	30300	12400	6110	5960	2110	1900
20	3250	10300	6740	3650	15800	14900	28900	13100	6420	5500	2060	2270
21	3250	9220	6360	3130	15700	15600	25800	15000	7510	5320	2040	3080
22	3470	8630	5940	3390	17500	16100	22900	20100	8060	5070	1990	6470
23	5130	8340	5820	3910	20200	15800	20400	28700	8960	4740	1930	9690
24	6660	7920	5740	4210	22100	14200	18500	28600	9770	4440	1990	12400
25	7390	7660	6070	4300	22200	12300	17100	27700	10000	4660	2060	15200
26	7080	7080	6530	4200	21200	11100	15900	28500	9430	4830	2050	16400
27	5960	6360	7410	4000	19400	10500	14700	23400	9090	4570	2080	13100
28	5500	6360	9390	3220	16800	9950	13500	18200	9880	4180	2330	8820
29	5240	6240	11500	2850	---	9590	12300	15600	10100	4050	2420	6770
30	5110	5940	12700	3200	---	9460	11400	14300	11100	4240	2670	5780
31	5150	---	13600	3800	---	9880	---	14700	---	4370	2270	---
TOTAL	144150	262730	268940	177970	242210	476780	579100	467400	260180	344510	79410	138610
MEAN	4650	8758	8675	5741	8650	15380	19300	15080	8673	11110	2562	4620
MAX	7390	17500	14000	14400	22200	29800	30300	28700	15000	25200	3920	16400
MIN	2420	4300	5740	2850	2150	9460	10800	10600	5800	4050	1930	1780
CFSM	.71	1.35	1.33	.88	1.33	2.36	2.97	2.32	1.33	1.71	.39	.71
IN.	.82	1.50	1.54	1.02	1.38	2.72	3.31	2.67	1.49	1.97	.45	.79
AC-FT	285900	521100	533400	353000	480400	945700	1149000	927100	516100	683300	157500	274900

CAL YR 1982 TOTAL 2647060 MEAN 7252 MAX 31800 MIN 940 CFSM 1.11 IN 15.13 AC-FT 5250000
WTR YR 1983 TOTAL 3441990 MEAN 9430 MAX 30300 MIN 1780 CFSM 1.45 IN 19.67 AC-FT 6827000

05465000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41°24'36", long 91°17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080206, on right bank 10 ft downstream from bridge on county highway G28, 3.4 mi northeast of Conesville, 5.2 mi downstream from Wapsinonoc Creek, 10.7 mi upstream from mouth, and at mile 39.8 upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi².

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 581.95 ft NGVD. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft downstream on left bank at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--44 years, 4,669 ft³/s, 8.14 in/yr, 3,383,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,800 ft³/s Apr. 2, 1961, gage height, 16.62 ft; maximum gage height, 16.85 ft Apr. 12, 1965; minimum daily discharge, 250 ft³/s Nov. 28, 1955, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft, from information by local residents to Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 3	0630	15,700	11.87	May 26	0930	28,100	13.81
Feb. 27	1445	20,600	13.16	July 10	1015	24,200	13.42
Mar. 14	0445	25,600	13.83	Sept. 27	2330	15,000	11.63
Apr. 21	1300	*28,700	*13.87				

Minimum daily discharge, 1,930 ft³/s Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2950	5750	7260	14300	4000	18700	10900	13700	16200	11800	4570	2710		
2	2860	8150	10800	14900	3950	16400	14100	13400	16300	15500	4420	2410		
3	2780	11000	14100	15300	3700	13600	18600	13100	15600	17900	4020	2450		
4	2760	10100	10500	14000	3600	12100	19400	13500	14000	19800	3840	2330		
5	3300	7980	11900	12100	3200	12200	19500	13800	12600	21500	3690	2250		
6	4780	6920	17600	10500	3100	13300	19800	13600	11500	22300	3570	2330		
7	5650	6170	18700	9570	2750	14800	20800	13500	10600	22500	3430	2380		
8	6150	5770	16600	8660	3300	16200	22100	13200	9810	23000	3320	2320		
9	6270	5400	15200	8150	3340	17400	23000	13100	9290	23700	3210	2260		
10	6850	5250	15300	7600	3040	18600	22800	12800	8930	24300	3120	2190		
11	7090	5270	15800	7000	3150	20200	21600	13300	8650	22900	3060	2180		
12	6110	6740	15600	6600	3240	22400	20600	14200	8070	18700	2860	2130		
13	5490	11700	13700	6200	3500	24800	20300	14300	7640	14500	2790	2030		
14	5140	14900	11100	5800	3670	25000	20500	14800	7330	11800	2740	1940		
15	4770	14800	9660	5400	3880	21700	21000	14200	7160	10100	2710	1930		
16	4380	15200	9110	4800	5220	17300	21700	13100	6920	9060	2650	1960		
17	4160	16300	8660	4320	8230	14400	22300	12900	6690	8160	2600	2040		
18	3940	17400	8700	4040	9090	13300	23100	13000	6600	7510	2530	1960		
19	3810	17900	8720	4020	10600	13000	24400	13400	6770	7000	2470	2040		
20	3820	15500	8350	3990	12600	13600	26600	14300	6810	5740	2370	2030		
21	3720	12300	7970	3960	14300	14500	28200	15200	6890	6350	2320	2160		
22	3550	10700	7640	3800	16600	15100	27700	15900	7530	6010	2290	2430		
23	3580	9880	7380	3900	16700	15500	26000	17600	8210	5800	2300	4010		
24	4290	9390	7230	4200	17500	15700	24100	20500	8810	5450	2250	7520		
25	6250	8920	7260	4500	18600	15000	22100	24800	9630	5030	2230	10300		
26	7220	8590	7340	4750	19900	13300	20100	27600	9990	5060	2220	12700		
27	7300	8110	7520	4650	20500	12200	18600	27200	9670	5220	2240	14500		
28	6650	7700	8660	4300	20000	11900	17400	27500	9440	5070	2240	14000		
29	6190	7750	10500	3700	---	11100	16000	25100	10300	4750	2290	9840		
30	5070	7560	12300	3350	---	10600	14800	20400	11000	4460	2610	7390		
31	5750	---	13300	3500	---	10400	---	17100	---	4470	2670	---		
TOTAL	153630	299100	344460	211860	241260	484300	628100	510100	288940	376440	89630	128720		
MEAN	4956	9970	11110	6834	8616	15620	20940	16450	9631	12140	2891	4291		
MAX	7300	17900	18700	15300	20500	25000	28200	27600	16300	24300	4570	14500		
MIN	2760	5250	7230	3350	2750	10400	10900	12800	6600	4460	2220	1930		
CFSM	.64	1.28	1.43	.88	1.11	2.01	2.69	2.11	1.24	1.56	.37	.55		
IN	.73	1.43	1.65	1.01	1.15	2.31	3.00	2.44	1.38	1.80	.43	.62		
AC-FT	304700	593300	683200	420200	478500	960600	1246000	1012000	573100	746700	177800	255300		
CAL YR 1982 TOTAL		3230650	MEAN	8851	MAX	30200	MIN	1250	CFSM	1.14	IN	15.44	AC-FT	6408000
WTR YR 1983 TOTAL		3756540	MEAN	10290	MAX	28200	MIN	1930	CFSM	1.32	IN	17.95	AC-FT	7451000

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°10'48", long 91°10'57", in NW1/4 SE1/4 sec.27, T.74 N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank 30 ft downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 mi downstream from Cedar River, and at mile 16.0.

DRAINAGE AREA.--12,499 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929. WSP 1708: 1955(P), 1956.

GAGE.--Water-stage recorder. Datum of gage is 538.17 ft NGVD; Oct. 1, 1914 to Apr. 15, 1934, nonrecording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 67.3 mi upstream, since Sept. 17, 1958. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Two discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--69 years, 6,930 ft³/s, 7.53 in/yr, 5,021,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s June 18, 1947, gage height, 16.14 ft, datum then in use; maximum gage height, 28.63 ft Apr. 22, 1973; minimum daily discharge, 300 ft³/s Nov. 28, 1955, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,900 ft³/s Apr. 4, gage height, 22.48 ft; minimum daily, 3,100 ft³/s Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4170	8080	12600	20000	6300	32500	20700	23700	22500	18200	10800	3860		
2	4060	9450	16500	20800	6500	30600	27400	23000	21800	20600	10800	3710		
3	3930	14400	24200	21100	6800	26500	34600	20700	21800	23800	10500	3750		
4	3800	14600	17900	20000	6300	22000	38400	20000	20700	26300	10400	3710		
5	3860	13100	20000	19000	5800	20500	35700	19900	19300	27700	10200	3580		
6	4900	12300	26000	18000	5400	20800	30000	19800	17900	28900	10100	3350		
7	6010	10700	29300	16400	5100	21300	28300	19500	16700	28800	9940	3360		
8	6690	9660	27600	14800	4900	22600	30600	19200	16100	28700	9790	3570		
9	7520	9240	21200	13800	5000	24000	34000	18900	15300	29000	9620	3370		
10	8980	8790	18300	12800	5400	25200	36600	18500	15000	29700	9380	3330		
11	11200	9400	20300	12000	5800	26900	36300	18400	14500	30100	8890	3340		
12	10200	13000	20400	11200	6000	29100	34600	18900	14100	28200	7690	3360		
13	8860	16000	19500	10500	6200	32200	32000	19600	13500	23500	5780	3490		
14	7530	19000	17200	9800	6500	35100	31000	19800	13100	19400	4310	3290		
15	7070	21000	15700	9400	7010	33700	31900	20200	12900	16900	4340	3110		
16	6600	23000	15800	8600	10000	26800	32900	19300	12700	15500	4250	3100		
17	6160	25000	16500	7600	16400	20000	33200	18400	12600	14600	4120	3110		
18	5900	26000	16300	6700	18400	16700	33300	18400	12500	13800	3960	3190		
19	5820	27000	16400	6400	18600	15500	33800	18600	12600	13200	3790	3560		
20	5820	23000	16100	6300	20200	15500	35400	19300	12700	12800	3640	3620		
21	5740	18200	15600	6200	23000	16100	37800	20600	12700	12500	3590	3530		
22	5640	15700	15200	6400	25300	16800	36900	21100	12800	12100	3630	3620		
23	5410	14600	15300	6500	27700	17600	35600	21800	13300	11900	3640	4260		
24	5520	14000	15300	6800	28100	19900	35000	23600	13800	11700	3490	7490		
25	7020	13600	15200	7400	29000	22400	32700	26500	14500	11400	3400	10500		
26	8670	13200	15000	7600	30700	23200	30700	31100	15200	11200	3410	11900		
27	9200	12900	13900	7900	32500	22900	29000	32900	15300	11300	3430	13400		
28	9000	12700	13300	7400	33200	23000	27800	30600	15200	11200	3430	14700		
29	8460	12800	16300	6800	---	22100	26500	31500	17500	11100	3510	13700		
30	8450	12900	19600	6300	---	21100	25000	30200	17500	10900	3750	11000		
31	8330	---	20200	6000	---	20400	---	25800	---	10800	3780	---		
TOTAL	210520	453320	562700	340560	402210	723000	967700	689800	466100	575800	191360	162870		
MEAN	6791	15110	18150	10980	14360	23320	32260	22250	15540	18570	6173	5429		
MAX	11200	27000	29300	21100	33200	35100	38400	32900	22500	30100	10800	14700		
MIN	3800	8080	12600	6000	4900	15500	20700	18400	12500	10800	3400	3100		
AC-FT	417600	899200	1116000	675400	797800	1434000	1919000	1368000	924500	1142000	379600	323100		
CAL YR 1982	TOTAL	5187560	MEAN	14210	MAX	47500	MIN	1900	CFSM	1.14	IN	15.44	AC-FT	10290000
WTR YR 1983	TOTAL	5745880	MEAN	15740	MAX	38400	MIN	3100	CFSM	1.26	IN	17.10	AC-FT	11400000

05465500 IOWA RIVER AT WAPELLO, IA--Continued
(National stream-accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1978 to current year.

WATER TEMPERATURES: January 1978 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--During periods of ice effect samples are collected in open water channel or through ice cover.
Records of specific conductance are obtained from suspended-sediment samples of time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 810 micromhos Jan 23, 1978-Jan. 20, 1981; minimum daily, 250 micromhos Sept. 18, 1978, July 20, 1982.

WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1980; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,970 mg/L June 25, 1981; minimum daily mean, 1 mg/L Jan. 21, 22, 1981.

SEDIMENT LOADS: Maximum daily, 413,000 tons July 19, 1982; minimum daily, 5.4 tons Jan. 21, 1981.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 730 micromhos Nov. 15; minimum daily, 310 micromhos Sept. 2.

WATER TEMPERATURES: Maximum daily, 31.0°C Aug. 4, 8, 17, 21, 29; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,640 mg/L Dec. 3; minimum daily mean, 7 mg/L Feb. 8.

SEDIMENT LOADS: Maximum daily, 107,000 tons Dec. 3; minimum daily, 93 tons Feb. 8.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	560	610	---	---	390	---	---	580	590	440	---
2	---	570	---	---	---	410	540	580	550	---	390	310
3	---	620	440	670	---	450	460	---	545	---	---	390
4	520	---	470	---	---	490	---	570	570	---	420	---
5	510	590	---	610	---	540	470	570	570	470	---	---
6	530	---	410	610	---	530	590	590	570	470	410	---
7	520	---	400	---	---	---	---	---	590	480	---	---
8	520	---	410	590	530	610	520	500	590	470	430	---
9	---	---	---	---	530	510	520	530	---	460	---	---
10	---	590	530	630	---	510	---	470	---	---	380	---
11	490	---	480	620	---	500	510	830	570	490	400	---
12	550	---	---	---	---	---	620	500	---	490	380	---
13	580	---	---	580	---	500	540	---	610	510	---	---
14	590	---	630	600	590	510	460	---	590	500	---	---
15	---	---	---	---	---	530	530	600	610	510	390	---
16	600	730	---	---	---	560	---	---	---	---	360	---
17	610	530	620	---	---	---	540	610	610	---	400	---
18	590	550	610	---	---	570	540	590	---	510	---	---
19	---	---	620	---	470	580	---	600	---	---	---	390
20	570	550	640	---	400	---	520	600	610	490	---	---
21	570	---	650	---	---	---	---	590	630	440	380	---
22	570	560	---	630	340	580	520	---	---	440	---	390
23	570	---	670	---	330	520	---	550	630	---	380	---
24	---	---	630	610	---	580	540	500	---	480	---	---
25	570	---	---	---	320	---	550	---	---	380	---	340
26	590	600	---	---	320	610	560	510	630	---	380	340
27	---	---	600	---	330	620	560	510	630	410	---	350
28	---	---	---	---	370	---	570	---	640	390	---	---
29	570	---	610	630	---	630	570	---	---	---	---	430
30	---	610	610	---	---	630	---	---	600	---	---	---
31	---	---	600	---	---	620	---	590	---	---	---	---

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	14.0	7.0	---	---	5.0	---	---	18.0	26.0	29.0	---
2	---	13.0	---	1.0	.0	6.0	6.0	14.0	18.0	---	29.0	29.0
3	---	10.0	10.0	1.0	---	8.0	5.0	---	18.0	---	---	25.0
4	22.0	---	8.0	---	---	9.0	---	15.0	20.0	---	31.0	---
5	22.0	7.0	---	1.0	---	10.0	6.0	16.0	19.0	25.0	---	---
6	21.0	7.0	7.0	1.0	---	11.0	6.0	17.0	19.0	24.0	30.0	---
7	18.5	---	5.0	---	---	---	---	---	20.0	24.0	---	---
8	18.0	---	4.0	.0	1.0	8.0	7.0	15.0	22.0	25.0	31.0	---
9	---	---	---	---	1.0	6.0	6.0	16.0	---	20.0	---	---
10	---	10.0	3.0	2.0	---	5.0	---	16.0	---	---	30.0	---
11	15.0	---	1.0	.0	---	3.0	7.0	17.0	23.0	27.0	28.0	---
12	15.0	---	---	---	---	---	8.0	18.0	---	27.0	28.0	---
13	15.0	---	1.0	1.0	---	4.0	9.0	---	24.0	28.0	---	---
14	15.0	---	1.0	.0	5.0	5.0	5.0	---	23.0	28.0	---	22.0
15	---	---	---	---	---	6.0	7.0	17.0	24.0	28.0	29.0	---
16	14.0	4.0	---	---	---	7.0	---	---	---	---	30.0	---
17	13.0	4.0	2.0	.0	---	---	6.0	15.0	24.0	---	31.0	22.0
18	15.0	4.0	2.0	.0	---	7.0	7.0	15.0	---	29.0	---	---
19	---	---	2.0	1.0	3.0	5.0	---	16.0	---	---	---	24.0
20	10.0	11.0	2.0	---	6.0	---	9.0	17.0	25.0	30.0	---	17.0
21	11.0	---	2.0	.0	---	---	---	16.0	26.0	30.0	31.0	---
22	11.0	7.0	---	1.0	4.0	5.0	12.0	---	---	29.0	---	15.0
23	10.0	5.0	2.0	---	4.0	5.0	---	18.0	28.0	---	28.0	---
24	---	3.0	4.0	1.0	---	5.0	13.0	19.0	---	28.0	---	---
25	11.0	2.0	---	2.0	4.0	---	14.0	---	---	29.0	---	15.0
26	11.0	4.0	---	---	3.0	5.0	15.0	19.0	29.0	---	30.0	16.0
27	---	2.0	4.0	1.0	4.0	4.0	15.0	18.0	28.0	29.0	---	17.0
28	---	---	3.0	1.0	5.0	---	15.0	---	28.0	29.0	---	---
29	12.0	---	1.0	---	---	5.0	14.0	---	---	---	31.0	19.0
30	---	6.0	2.0	---	---	5.0	---	---	27.0	---	---	---
31	---	---	2.0	1.0	---	5.0	---	17.0	---	---	25.5	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)										
1	97	1090	131	2860	81	2760	231	12500	53	902	152	13300
2	90	987	173	4410	652	29000	114	6400	43	755	134	11100
3	88	934	629	24500	1640	107000	88	5010	38	698	120	8590
4	86	882	480	18900	650	31400	94	5080	32	544	135	8020
5	89	928	260	9200	510	27500	96	4920	27	423	127	7030
6	135	1790	210	6970	808	56700	109	5300	20	292	135	7580
7	189	3070	178	5140	600	47500	121	5360	14	193	126	7250
8	293	5290	142	3700	398	29700	115	4600	7	93	227	13900
9	295	5990	105	2620	295	16900	92	3430	14	189	192	12400
10	225	5460	81	1920	241	11900	63	2180	19	277	152	10300
11	226	6830	93	2360	265	14500	56	1810	28	438	135	9810
12	195	5370	184	6460	269	14800	59	1780	40	648	130	10200
13	164	3920	267	11500	237	12500	57	1620	55	921	124	10800
14	130	2640	335	17200	129	5990	61	1610	67	1190	107	10100
15	108	2060	374	21200	80	3390	65	1650	79	1500	95	8640
16	102	1820	370	23000	117	4990	68	1580	248	6700	85	6150
17	92	1530	337	22700	166	7400	70	1440	677	25500	86	4640
18	91	1450	257	18000	144	6340	62	1120	572	28400	87	3920
19	101	1590	213	15500	150	6640	61	1050	488	24500	80	3350
20	105	1650	187	11600	149	6480	54	919	458	25000	79	3310
21	90	1390	164	8060	87	3660	50	837	446	27700	77	3350
22	80	1220	140	5930	79	3240	60	1040	432	29500	77	3490
23	66	964	140	5820	86	3550	63	1110	333	24900	78	3710
24	75	1120	133	5030	175	7230	63	1160	273	20700	93	5000
25	109	2070	130	4770	112	4600	57	1140	233	18200	101	6110
26	177	4140	138	4920	64	2590	46	944	198	16400	104	6510
27	228	5660	108	3760	124	4650	33	704	174	15300	118	7300
28	203	4930	98	3360	225	8080	38	759	159	14300	115	7140
29	130	2970	98	3390	298	13100	47	863	---	---	105	6270
30	108	2460	97	3380	345	18300	53	902	---	---	122	6950
31	110	2470	---	---	278	15200	58	940	---	---	126	6940
TOTAL	---	84675	---	277860	---	527590	---	79758	---	286163	---	233160

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	352	19700	102	6530	256	15500	356	17500	180	4960	205	2130
2	1390	103000	108	6710	252	14800	363	20200	194	5340	192	1920
3	755	70500	146	8160	183	10800	442	28400	223	5920	111	1120
4	410	42500	211	11400	186	10400	458	32500	198	5160	90	902
5	309	29800	172	9240	164	8550	415	31000	187	4800	80	773
6	280	22700	158	8450	162	7830	314	24500	181	4560	75	680
7	249	19000	198	10400	160	7210	206	16000	170	4200	77	699
8	211	17400	185	9590	152	6610	172	13300	148	3570	110	1060
9	195	17900	177	9030	148	6110	147	11500	140	3300	103	934
10	191	18900	206	10300	144	5830	136	10900	176	4010	96	863
11	189	18500	157	7800	157	6150	145	11800	193	4140	95	854
12	188	17600	170	8680	173	6590	169	12900	198	3760	95	862
13	178	15400	216	11400	156	6690	202	12800	185	2770	116	1090
14	261	21800	228	12200	150	5310	215	11300	166	1930	109	968
15	228	19600	212	11600	156	5430	215	9810	150	1760	94	789
16	199	17700	187	9740	150	5140	205	8580	151	1730	92	770
17	178	16000	164	8150	144	4900	197	7770	149	1660	105	882
18	143	12900	142	7050	141	4760	190	7080	146	1560	125	1080
19	108	9860	137	6880	149	5070	180	6420	143	1460	213	2050
20	88	8410	153	7970	158	5420	167	5770	141	1380	254	2480
21	78	7960	224	12500	157	5380	154	5160	138	1340	203	1930
22	71	7070	278	15700	160	5530	177	5690	140	1370	168	1640
23	67	6440	248	14600	179	6430	184	5760	150	1480	229	2630
24	65	6140	218	13900	187	6970	184	5610	135	1270	395	7350
25	66	5830	194	13900	196	7670	214	6360	120	1100	484	12800
26	73	6050	143	12000	203	8330	240	6930	106	973	451	14100
27	80	6260	133	11800	203	8390	223	6500	102	945	390	14100
28	83	6230	165	13600	208	8540	210	6120	110	1020	308	12200
29	92	6580	264	22500	294	13900	205	5870	127	1210	216	7990
30	96	6480	270	22000	365	17200	198	5560	144	1460	167	4690
31	---	---	238	16600	---	---	190	5230	164	1670	---	---
TOTAL	---	584210	---	350380	---	236540	---	364820	---	81808	---	102336
TOTAL LOAD FOR YEAR:		3209300		TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)
NOV						
10...	1230	10.0	9200	85	2120	81
DEC						
22...	0930	1.0	15100	81	3300	64
MAR						
04...	1100	8.5	22000	156	9270	75
MAY						
06...	1130	17.0	19700	124	6600	84
JUL						
20...	1300	29.0	13200	148	5270	89
AUG						
31...	1130	27.0	3940	135	1440	99

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTENSER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. X FINER THAN .062 MM (S0164)	BED MAT. SIEVE DIAM. X FINER THAN .125 MM (S0165)	BED MAT. SIEVE DIAM. X FINER THAN .250 MM (S0166)	BED MAT. SIEVE DIAM. X FINER THAN .500 MM (S0167)	BED MAT. SIEVE DIAM. X FINER THAN 1.00 MM (S0168)	BED MAT. SIEVE DIAM. X FINER THAN 2.00 MM (S0169)	BED MAT. SIEVE DIAM. X FINER THAN 4.00 MM (S0170)	BED MAT. SIEVE DIAM. X FINER THAN 8.00 MM (S0171)	BED MAT. SIEVE DIAM. X FINER THAN 16.0 MM (S0172)
NOV 10...	1230	9200	7	1	2	12	64	88	95	98	100	--
MAR 4...	1100	22000	7	--	0	3	28	70	91	98	99	100
MAY 06...	1130	19700	7	--	0	7	50	80	90	98	100	--
JUL 20...	1300	13200	9	2	3	13	58	88	96	99	100	--
AUG 31...	1130	3950	8	2	5	17	51	81	90	96	99	100

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED SATURATION (PERCENT) (00301)	BAROMETRIC PRESSURE (MM HG) (00026)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (S1625)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (S1673)	HARDNESS (MG/L AS CaCO3) (00900)
NOV , 1982 10...	1230	9200	600	8.4	10.0	22	10.6	95	--	340	3000	300
DEC 22...	0930	15100	630	8.3	1.0	19	13.8	98	--	190	1000	310
MAR , 1983 04...	1100	22000	450	8.3	8.5	32	11.0	97	738	440	1600	220
MAY 06...	1130	19700	540	8.2	17.0	18	9.6	103	737	2700	850	270
JUL 20...	1300	13200	495	8.3	29.0	32	7.1	94	749	780	820	230
AUG 31...	1130	3940	396	9.0	27.0	27	11.6	149	748	130	830	180

DATE	HARDNESS, NONCARBONATE (MG/L CaCO3) (00902)	CALCIUM DISSOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DISSOLVED (MG/L AS Mg) (00925)	SODIUM, DISSOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (S0410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS Cl) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SiO2) (00955)
NOV , 1982 10...	78	80	24	11	7	.3	2.9	221	40	26	.20	13
DEC 22...	76	83	26	9.2	6	.2	2.3	239	40	28	.20	15
MAR , 1983 04...	49	60	18	6.9	6	.2	3.7	175	30	18	.20	13
MAY 06...	79	71	22	8.8	7	.2	2.1	189	36	20	.20	8.1
JUL 20...	45	61	19	7.7	7	.2	3.2	186	29	18	.30	14
AUG 31...	59	36	21	14	15	.5	2.5	118	42	25	.20	.2

IOWA RIVER BASIN

0B465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL SOLVED (MG/L AS N) (00625)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS, TOTAL SOLVED (MG/L AS P04) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, TOTAL SOLVED (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)
NOV , 1982												
10...	357	330	.50	9120	6.5	<.060	2.10	.110	.67	.110	.220	85
DEC 22...	407	347	.55	16600	11	<.060	1.30	.100	.61	.120	.200	81
MAR , 1983												
04...	294	256	.40	17500	6.3	.220	2.20	.160	1.0	.190	.340	156
MAY 06...	321	282	.44	17100	8.6	.070	1.70	.060	.55	.070	.180	124
JUL 20...	304	264	.41	10800	6.0	.040	2.90	.120	.89	.160	.290	148
AUG 31...	213	212	.29	2270	<.10	.020	1.30	.060	.55	.080	.180	135

DATE	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV , 1982											
10...	2120	81	2	10	110	<1	<1	<1	<3	2	12
DEC 22...	3300	64	--	--	--	--	--	--	--	--	--
MAR , 1983											
04...	9270	75	2	20	110	<1	<1	<1	<3	3	19
MAY 06...	6500	84	1	10	110	<1	<1	<1	<3	2	6
JUL 20...	5270	89	--	--	--	--	--	--	--	--	--
AUG 31...	1440	99	2	<10	72	1	<1	<1	<3	4	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV , 1982											
10...	1	12	6	.1	<10	<1	1	<1	170	<6.0	14
DEC 22...	--	--	--	--	--	--	--	--	--	--	--
MAR , 1983											
04...	<1	10	5	<.1	<10	2	1	<1	130	<6.0	4
MAY 06...	<1	16	3	.1	<10	1	1	<1	150	<6.0	8
JUL 20...	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	2	13	1	--	<10	--	1	<1	140	<6.0	5

SKUNK RIVER BASIN

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'05", long 93°37'02", in NW1/4 SW1/4 sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi north of Ames, 3.5 mi downstream from Keigley Branch, 5.2 mi upstream from Squaw Creek, and at mile 228.1 upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi².

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as Skunk River near Ames.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M). WDR Iowa 1967: 1965. WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.61 ft NGVD (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records good except Dec. through Jan., which are poor. Several diversions for irrigation above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--58 years (water years 1921-27, 1933-83), 157 ft³/s, 6.77 in/yr, 113,700 acre-ft/yr; median of yearly mean discharges, 120 ft³/s, 5.2 in/yr, 86,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,630 ft³/s June 10, 1954, gage height, 13.66 ft; maximum gage height, 13.90 ft May 20, 1944; no flow at times in 1934, 1937, 1953-57, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	unknown	unknown	unknown	Apr. 2	2330	1,970	5.75
Dec. 6	unknown	unknown	unknown	Apr. 15	0115	2,470	6.24
Dec. 28	1615	1,790	5.62	May 20	0445	2,680	6.59
Feb. 20	1745	2,160	5.99	July 3	2345	*5,150	*9.43
Mar. 7	1200	1,760	5.59				

Minimum daily discharge, 29 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	232	187	554	186	451	1850	344	384	1060	164	153
2	30	299	193	468	111	481	1870	550	366	2240	142	109
3	38	236	191	415	56	497	1760	925	344	3860	122	86
4	42	199	182	382	83	506	1220	953	323	3790	111	72
5	44	186	425	341	118	524	955	722	312	2050	104	64
6	46	170	1430	324	116	820	995	630	297	1360	90	82
7	48	163	1030	313	116	1640	976	722	284	1030	109	74
8	47	151	742	289	120	1130	814	820	278	834	87	60
9	56	141	560	285	116	719	809	684	268	690	76	53
10	69	161	475	322	111	539	1210	589	261	575	69	47
11	71	474	400	311	106	440	1200	521	260	495	67	43
12	71	2050	360	229	104	391	1290	483	246	420	66	39
13	70	1080	350	291	113	375	2150	466	236	371	55	37
14	66	660	310	280	267	377	2260	475	384	334	47	35
15	61	475	270	222	765	409	2180	455	630	299	44	43
16	56	412	240	229	1130	798	1860	420	485	265	40	65
17	62	353	260	215	1410	911	1420	396	407	237	36	52
18	50	315	268	167	1210	761	1100	460	530	219	33	46
19	50	307	249	167	1780	644	947	2160	1220	212	33	59
20	123	311	234	174	2060	559	800	2400	918	203	34	536
21	475	291	224	177	1550	501	696	1490	774	179	33	643
22	327	268	224	157	1240	442	619	1190	602	161	73	366
23	250	250	227	152	990	414	660	960	510	155	48	261
24	207	218	398	141	793	405	600	776	445	155	52	205
25	178	225	1140	113	621	396	460	742	398	147	42	179
26	155	210	855	72	517	382	430	651	389	137	35	156
27	141	192	656	85	458	254	380	569	475	128	46	140
28	163	210	1570	141	442	337	371	614	660	118	229	126
29	240	205	1460	1000	---	409	353	480	648	268	128	116
30	224	186	872	880	---	431	335	442	788	307	121	107
31	196	---	669	345	---	990	---	413	---	209	272	---
TOTAL	3675	10630	16641	9241	16689	17923	32370	23401	14012	22508	2608	4044
MEAN	119	354	537	298	596	578	1079	755	467	726	84.1	135
MAX	475	2050	1570	1000	2060	1640	2260	2400	1220	3860	272	643
MIN	29	141	182	72	56	264	336	344	236	118	33	35
CFSM	.38	1.12	1.71	.95	1.89	1.84	3.43	2.40	1.48	2.31	.27	.43
IN.	.43	1.26	1.97	1.09	1.97	2.12	3.82	2.76	1.65	2.66	.31	.48
AC-FT	7290	21080	33010	18330	33100	35650	64210	46420	27790	44640	5170	8020

CAL YR 1982 TOTAL 116004.0 MEAN 318 MAX 3020 MIN 3.7 CFSM 1.01 IN 13.70 AC-FT 230100
WTR YR 1983 TOTAL 173742.0 MEAN 476 MAX 3860 MIN 29 CFSM 1.51 IN 20.52 AC-FT 344600

05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'45", in NE1/4 NW1/4 sec.10, T.83 N., R.24 W., Story County, Hydrological Unit 07080105, on left bank 65 ft downstream from Lincoln Way Bridge in Ames, 0.2 mi, downstream from College Creek, and 2.4 mi upstream from mouth.

DRAINAGE AREA.--204 mi².

PERIOD OF RECORD.--May 1919 to September 1927, May 1965 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WDR Iowa. 1966: 1965, WDR IA-71-1: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft NGVD (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi upstream at different datum. Mar. 11, 1925, to Apr. 30, 1927, nonrecording gage at site 65 ft upstream at datum about 4 ft higher..

REMARKS.--Records good except those for December, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years (water years 1920-27,1965-83), 125 ft³/s, 8.32 in/yr, 90,560 acre-ft/yr; median of yearly mean discharges, 98 ft³/s, 6.5 in/yr, 71,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s June 27, 1975, gage height, 14.00 ft, on basis of contracted-opening measurement; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918, reached a stage of 14.5 ft, from floodmarks, site and datum used 1919-25, discharge, 6,900 ft³/s. Flood of Mar. 1, 1965, reached a stage of 10.7 ft, from graph based on gage readings, at present site and datum, discharge, 4,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	unknown	1,690	a5.88	May 19	0630	*2,260	*7.63
Feb. 19	0200	1,650	5.81	June 29	2300	2,070	7.20
Feb. 20	0500	1,790	6.22	July 2	0930	2,210	7.55
Apr. 1	0300	1,620	5.76	July 4	0100	2,190	7.52
Apr. 13	0600	2,070	7.19				

a from floodmark

Minimum daily discharge, 3.3 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	74	92	305	103	248	1440	267	229	1280	46	13
2	15	94	98	267	55	262	1330	448	225	1760	40	9.9
3	17	55	95	252	33	267	1080	765	207	1310	36	7.7
4	21	82	96	238	62	262	748	690	203	1480	33	5.5
5	20	66	414	214	91	272	626	517	199	787	31	6.7
6	26	60	950	207	96	705	770	474	191	589	28	12
7	16	55	667	198	86	1100	712	494	175	489	36	10
8	26	48	512	190	80	635	584	454	164	400	42	6.6
9	23	53	382	182	77	400	622	405	164	332	36	5.6
10	21	55	291	233	66	286	924	360	149	286	36	4.8
11	28	382	240	228	62	228	852	317	146	248	32	4.5
12	26	834	220	142	62	202	1220	296	139	216	27	3.7
13	24	424	205	190	80	198	1890	291	127	191	24	3.3
14	23	272	174	186	267	194	1810	312	394	174	20	4.1
15	28	202	148	142	780	233	1370	291	480	158	7.9	20
16	25	174	137	156	878	744	1130	277	322	136	7.9	15
17	17	145	134	126	1080	654	829	257	262	124	7.2	11
18	14	135	140	123	1000	512	690	396	381	120	7.2	7.2
19	26	134	134	114	1480	418	648	2080	569	119	6.0	59
20	84	134	141	106	1510	352	555	1370	405	99	4.0	138
21	143	115	146	106	1000	310	489	908	371	86	12	108
22	96	108	147	101	844	272	436	747	306	75	30	61
23	84	101	151	98	626	248	388	569	254	67	17	44
24	69	82	371	94	458	248	338	503	220	65	15	35
25	57	94	1130	75	328	233	312	485	202	61	8.5	31
26	50	94	600	49	262	219	291	400	267	55	7.2	25
27	46	77	388	61	238	142	257	354	1020	48	33	22
28	71	104	1210	96	238	233	243	327	997	68	17	19
29	64	94	1140	703	---	219	229	296	1750	107	9.9	18
30	62	90	600	631	---	272	216	272	1760	73	49	15
31	65	---	394	210	---	988	---	257	---	57	23	---
TOTAL	1294.3	4437	11547	6023	11942	11556	23029	15879	12278	11060	728.8	725.6
MEAN	41.8	148	372	194	427	373	768	512	409	357	23.5	24.2
MAX	143	834	1210	703	1510	1100	1890	2080	1760	1760	49	138
MIN	8.3	48	92	49	33	142	216	257	127	48	4.0	3.3
CFSM	.21	.73	1.82	.95	2.09	1.83	3.77	2.51	2.01	1.75	.12	.12
IN.	.24	.81	2.11	1.10	2.18	2.11	4.20	2.90	2.24	2.02	.13	.13
AC-FT	2570	8800	22900	11950	23690	22920	45680	31500	24350	21940	1450	1440
CAL YR 1982	TOTAL	80068.6	MEAN 219	MAX 2410	MIN 1.5	CFSM 1.07	IN 14.60	AC-FT 158800				
WTR YR 1983	TOTAL	110499.7	MEAN 303	MAX 2080	MIN 3.3	CFSM 1.49	IN 20.15	AC-FT 219200				

SKUNK RIVER BASIN

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41°21'19", long 92°39'31", in NW1/4 SW1/4 sec.25, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080105, on right bank 400 ft upstream from bridge on U.S. Highway 63, 0.3 mi downstream from Painter Creek, 4.0 mi north of Oskaloosa, 52.0 mi. upstream from confluence with North Skunk River, and at mile 147.3 upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Skunk River near Oskaloosa. Prior to October 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft NGVD. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years, 916 ft³/s, 7.61 in/yr, 663,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s June 15, 1947, gage height, 21.26 ft, from floodmarks; maximum gage height, 22.52 ft Feb. 3, 1973, backwater from ice; minimum daily discharge, 1.8 ft³/s Oct. 11-13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft, from floodmarks, discharge, 37,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 13	unknown	5,400	16.00	Apr. 4	unknown	8,660	18.90
Dec. 7	1430	5,050	15.57	Apr. 16	unknown	9,200	19.27
Dec. 29	unknown	5,890	16.50	May 21	2215	7,970	18.37
Feb. 21	0845	7,260	17.79	July 7	0530	*10,900	*20.33

Minimum daily discharge, 249 ft³/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	320	1270	1120	3280	640	2040	4990	1860	2220	7350	920	707		
2	313	2220	1080	2750	620	1970	7190	1970	2040	7340	775	607		
3	309	1770	1070	2390	600	1940	8310	2210	1920	7990	684	506		
4	304	1390	1030	2130	580	1930	8500	3090	1820	9130	624	433		
5	304	1190	2310	1970	550	1920	7230	3960	1700	10100	583	389		
6	380	1060	4330	1880	570	2190	6040	3240	1620	10500	545	367		
7	545	972	4900	1810	600	3270	5380	2990	1530	10900	546	405		
8	721	905	4440	1720	580	4200	4950	3430	1420	9440	493	422		
9	3840	844	3260	1610	600	4180	4850	3440	1320	6200	469	365		
10	1520	797	2710	1530	620	3080	5200	3170	1260	4080	443	334		
11	1050	1100	2390	1480	600	2410	5560	2800	1230	3030	410	311		
12	835	4720	2030	1420	580	2070	5670	2560	1200	2480	385	293		
13	753	5330	1830	1340	640	1920	6370	2390	1180	2130	366	276		
14	685	4260	1700	1270	900	1830	7790	2240	1170	1880	350	263		
15	629	2890	1620	1210	1400	1790	8760	2130	1400	1760	336	262		
16	580	2350	1480	1130	2800	1860	9130	2040	1900	1630	318	293		
17	551	2000	1340	1060	4200	1890	8210	1940	1910	1440	302	316		
18	533	1830	1260	1000	5000	2490	7110	1860	1720	1320	287	303		
19	518	1700	1210	940	6380	2490	6000	3800	2260	1220	274	406		
20	521	1600	1160	900	7050	2280	5120	6940	3520	1130	262	1820		
21	556	1500	1110	940	7220	2080	4510	7800	3080	1060	249	2400		
22	651	1420	1080	950	6450	1900	3960	7620	2560	985	250	1800		
23	822	1320	1050	920	5300	1760	3390	6720	2240	917	251	1360		
24	729	1210	1040	880	4510	1660	3010	5150	1970	860	284	1050		
25	665	1130	1170	820	3600	1620	2700	4180	1730	823	276	880		
26	623	1100	1800	760	2860	1640	2510	3680	1540	795	255	772		
27	593	1080	2490	710	2420	1760	2350	3180	1420	743	349	694		
28	590	1160	4380	680	2180	1730	2190	2980	3370	698	336	634		
29	828	1230	5810	660	---	1950	2050	3060	5700	656	356	585		
30	945	1180	5490	640	---	2250	1940	2660	6630	1030	603	544		
31	920	---	4290	660	---	2740	---	2430	---	1090	1020	---		
TOTAL	23133	52528	71980	41440	70060	68840	160970	107420	64580	110707	13601	19797		
MEAN	746	1751	2322	1337	2502	2221	5366	3465	2153	3571	439	660		
MAX	3840	5330	5810	3280	7220	4200	9130	7800	6630	10900	1020	2400		
MIN	304	797	1030	640	560	1620	1940	1860	1170	656	249	262		
CFSM	.46	1.07	1.42	.82	1.53	1.36	3.28	2.12	1.32	2.18	.27	.40		
IN.	.53	1.20	1.64	.94	1.59	1.57	3.66	2.44	1.47	2.52	.31	.45		
AC-FT	45880	104200	142800	82200	139000	136500	319300	213100	128100	219600	26980	39270		
CAL YR 1982	TOTAL	660487	MEAN	1810	MAX	12000	MIN	56	CFSM	1.11	IN	15.03	AC-FT	1310000
WTR YR 1983	TOTAL	805056	MEAN	2206	MAX	10900	MIN	249	CFSM	1.35	IN	18.32	AC-FT	1597000

SKUNK RIVER BASIN

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'16", in NE1/4 SE1/4 sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080105, on right bank 20 ft downstream from bridge on State Highway 149, 1.2 mi downstream from Cedar Creek, 2.2 mi south of Sigourney, 4.0 mi upstream from Bridge Creek, and 16.2 mi upstream from confluence with South Skunk River.

DRAINAGE AREA.--730 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 155B: 1946-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 651.53 ft NGVD. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years, 436 ft³/s, 8.11 in/yr, 315,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s Mar. 31, 1960, gage height, 25.33 ft; minimum daily, 0.1 ft³/s Oct. 7 to Nov. 15, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft, from floodmark, discharge, 14,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,190 ft³/s April 5, gage height, 17.04 ft at 0715 hours, no other peak above base of 3,800 ft³/s; minimum daily, 44 ft³/s Sept. 13,14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	374	640	1160	285	542	1690	672	582	1250	142	138
2	144	1190	1030	1050	280	523	3340	1390	532	1020	127	110
3	144	1370	882	959	270	503	3850	1050	508	1710	118	73
4	144	853	740	899	265	491	3900	951	479	2050	110	59
5	144	619	2120	840	255	489	4180	926	446	2170	104	50
6	154	534	3270	800	240	635	3710	807	418	2470	101	48
7	183	476	3120	770	230	1190	2450	760	404	2990	97	46
8	265	446	3280	730	225	1490	1810	783	378	1430	93	56
9	807	416	1810	710	235	1080	2370	752	351	812	91	97
10	2120	392	1210	720	235	828	2870	672	329	678	84	65
11	2390	552	960	720	230	706	2700	631	339	588	79	54
12	1650	2200	850	690	240	634	2320	618	346	518	75	48
13	783	2360	770	670	300	604	2420	618	303	458	71	44
14	649	2790	740	660	400	595	2920	616	301	410	68	44
15	572	1510	760	620	940	576	3120	596	279	374	65	49
16	521	969	740	520	1700	546	3070	562	292	345	62	51
17	479	863	699	460	2330	602	2840	520	288	320	60	53
18	460	764	693	400	2270	560	1820	503	304	296	56	55
19	473	708	697	390	1930	524	1520	594	327	272	54	92
20	490	686	673	385	2070	502	1350	1380	387	259	50	210
21	504	640	631	390	2110	489	1220	1220	348	251	48	880
22	570	579	613	410	1470	475	1130	1140	289	228	47	706
23	569	554	621	400	1140	446	1050	1240	258	205	45	334
24	520	521	648	380	957	431	972	1050	236	189	46	235
25	460	465	750	365	821	429	893	850	221	178	51	191
26	415	453	859	345	694	428	842	811	208	172	50	160
27	385	454	757	315	614	493	797	733	203	168	46	142
28	355	574	1290	305	573	674	747	694	199	154	55	127
29	410	744	2120	300	---	844	709	685	283	144	73	115
30	470	726	2070	300	---	1190	681	734	1640	137	82	105
31	430	---	1420	290	---	1400	---	658	---	133	76	---
TOTAL	17804	25772	37463	17963	23309	20919	63301	25216	11478	22379	2326	4447
MEAN	574	859	1208	579	832	675	2110	813	383	722	75.0	148
MAX	2390	2790	3280	1160	2330	1490	4180	1390	1640	2990	142	880
MIN	144	374	613	290	225	428	681	503	199	133	45	44
CFSM	.79	1.18	1.66	.79	1.14	.93	2.89	1.11	.53	.99	.10	.20
IN.	.91	1.31	1.91	.91	1.19	1.07	3.23	1.28	.58	1.14	.12	.23
AC-FT	35310	51120	74310	35610	46230	41490	125600	50020	22770	44390	4610	8820
CAL YR 1982	TOTAL	320296	MEAN 878	MAX 8420	MIN 70	CFSM 1.20	IN 16.32	AC-FT 635300				
WTR YR 1983	TOTAL	272367	MEAN 746	MAX 4180	MIN 44	CFSM 1.02	IN 13.88	AC-FT 540200				

SKUNK RIVER BASIN

05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA

LOCATION.--Lat. 40°55'20", long 91°40'10", in SE1/4 NW1/4 sec.28, T.71 N., R.7 W., Henry County, Hydrologic Unit 07080107, on left bank 30 ft upstream from bridge on county highway H46, 3.0 mi west of Oakland Mills, 2.9 mi upstream from Wolf Creek, and 4.3 mi upstream from mouth.

DRAINAGE AREA.--530 mi².

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1957 to 1977. July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 565.07 NGVD.

REMARKS.--Records good except those for winter period, which are fair. Occasional high-water measurements were made by Corps of Engineers in 1965, 1966, 1970 and 1974 and by U.S. Geological Survey in 1966 and 1967. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 412 ft³/s, 10.6 in/yr, 298,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,560 ft³/s Apr. 3, 1983, gage height, 19.68 ft; minimum daily, 1.0 ft³/s July 9, 1977 and Sept. 14, 1983.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 22, 1973 reached a stage of 24.09 ft, discharge not determined. Flood of June 1905 reached a stage approximately 2 feet higher from information by local resident.

EXTREMES FOR CURRENT PERIOD.--Peak discharges above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 3	1500	5,660	16.75	Apr. 3	0030	8,560	19.68
Dec. 7	0030	5,570	16.63	Apr. 10	1500	4,020	14.26
Mar. 28	0245	3,410	13.16				

Minimum daily discharge, 1.0 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	103	480	299	50	212	1460	192	107	200	3.9	9.1
2	58	412	3570	258	50	192	6950	245	98	107	6.1	11
3	55	189	5500	203	49	178	7840	424	355	62	7.9	7.2
4	54	128	4340	187	48	163	7170	324	408	53	9.2	6.1
5	54	92	4280	192	46	163	5870	259	187	40	8.3	5.1
6	53	79	5440	199	45	441	3660	210	119	44	5.6	4.9
7	48	73	5270	202	44	1040	2160	188	96	33	5.8	4.3
8	71	70	2820	175	45	643	1540	182	85	32	4.8	3.5
9	250	67	937	132	47	386	2020	164	73	69	3.3	3.3
10	796	66	650	133	47	250	3790	137	65	126	2.8	4.2
11	379	267	510	130	52	203	2160	131	59	134	3.7	4.3
12	205	1440	450	100	58	184	1260	132	53	109	2.7	3.0
13	150	2180	335	90	69	169	969	143	49	31	2.8	1.3
14	124	678	315	86	160	168	1270	140	49	14	2.8	1.0
15	104	370	290	82	860	166	1230	135	45	13	2.8	3.9
16	93	247	215	76	1800	148	841	126	40	11	2.8	11
17	83	205	200	68	2130	137	640	110	39	11	2.7	23
18	74	179	190	64	1190	126	554	104	36	10	2.9	12
19	88	156	180	61	992	124	542	127	35	9.5	3.8	970
20	175	148	180	60	1150	123	482	314	36	8.8	4.5	714
21	141	145	161	63	950	128	309	218	43	7.8	4.0	195
22	98	129	148	64	752	131	275	190	42	7.7	12	68
23	76	114	165	64	983	116	286	201	35	6.8	12	35
24	67	120	524	63	610	107	311	164	30	6.2	13	15
25	66	112	1010	62	460	108	266	130	28	6.0	10	11
26	64	87	614	60	328	137	236	130	24	5.6	6.5	8.1
27	63	92	356	58	258	2020	222	121	23	5.1	4.2	6.4
28	62	421	1170	56	234	3010	212	127	23	5.1	3.2	6.3
29	70	1310	1210	54	---	1550	192	123	27	4.5	2.3	6.0
30	92	777	442	52	---	1140	186	143	75	4.5	3.9	6.0
31	103	---	341	51	---	985	---	127	---	4.1	5.4	---
TOTAL	3881	10456	42293	3444	13507	14548	55903	5461	2384	1180.7	165.7	2159.0
MEAN	125	349	1364	111	482	473	1863	176	79.5	38.1	5.35	72.0
MAX	796	2180	5500	299	2130	3010	7840	424	408	200	13	970
MIN	48	66	148	51	44	107	186	104	23	4.1	2.3	1.0
CFSM	.24	.66	2.57	.21	.91	.89	3.52	.33	.15	.07	.01	.14
IN.	.27	.73	2.97	.24	.95	1.03	3.92	.38	.17	.08	.01	.15
AC-FT	7700	20740	83890	6830	26790	29050	110900	10830	4730	2340	329	4280

CAL YR 1982	TOTAL	248972.0	MEAN	682	MAX	6310	MIN	21	CFSM	1.29	IN	17.47	AC-FT	493800
WTR YR 1983	TOTAL	155482.4	MEAN	426	MAX	7840	MIN	1.0	CFSM	.80	IN	10.91	AC-FT	308400

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°45'13", long 91°16'40", in NE1/4 NE1/4 sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft upstream from bridge on State Highway 394 at Augusta, 2.0 mi upstream from Long Creek, and at mile 12.5.

DRAINAGE AREA.--4,303 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1936, 1937-38 (M), 1942 (M). WSP 1438: Drainage area. WDR IA-71-1: 1966 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft NGVD. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft upstream at datum about 0.7 ft higher. May 27, 1915, to Jan. 14, 1935, nonrecording gage at site 400 ft upstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--69 years (water years 1915-83), 2,407 ft³/s, 7.60 in/yr, 1,744,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,800 ft³/s Apr. 23, 1973, gage height, 27.05 ft; minimum daily, 7 ft³/s Aug. 27 to Sept. 1, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft, discharge, about 45,000 ft³/s. Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 3	0515	21,700	15.83	Apr. 3	1830	*29,300	*19.15
Dec. 6	1100	20,800	15.47				

Minimum daily discharge, 320 ft³/s August 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	905	2070	4250	6550	1700	5760	7540	4140	4450	4220	1040	463
2	850	3030	13100	6200	1650	4650	22500	4100	3890	5600	1290	582
3	806	2640	21400	6070	1550	4080	28500	4270	4000	5140	1360	1010
4	761	3650	17700	5970	1450	3850	27800	4770	3750	5630	1240	933
5	734	3840	17400	4990	1400	3730	26600	4310	3300	6320	1090	774
6	729	2990	20700	4210	1350	4140	25100	4410	2920	7020	989	678
7	703	2520	19700	3880	1300	5340	19000	4590	2640	7620	915	588
8	691	2270	17500	3640	1250	5670	16100	4560	2480	8180	986	538
9	1120	2110	12700	3430	1300	5840	17000	4380	2350	8820	658	457
10	2470	1980	10200	3290	1350	5830	18400	4240	2190	9450	1010	428
11	4740	2440	8770	3220	1500	5530	17100	4300	2050	9720	716	500
12	5300	4940	7000	3060	1900	5430	14400	4260	1930	9640	396	495
13	4400	8270	5750	2900	2300	5060	12900	4070	1910	9000	618	425
14	3140	8450	4830	2700	2800	4430	11600	3760	1850	7000	578	375
15	2260	7260	4180	2550	4100	4190	10900	3800	1750	5070	543	378
16	1940	7060	4070	2500	8000	4110	10600	3430	1700	3680	511	427
17	1740	6130	4000	2300	10500	4080	10500	3310	1690	3060	483	400
18	1590	5410	3800	2100	10100	4180	10900	3190	2060	2710	460	380
19	1540	4530	3500	1950	8890	4380	11400	3190	2260	2460	446	4580
20	1780	3970	3360	1850	9520	4780	11700	3470	2150	2220	424	3840
21	1660	3660	3180	1900	9480	4920	11200	4490	2250	2050	389	1960
22	1630	3430	3070	1950	9240	4760	10100	5410	3110	1910	424	1580
23	1420	3280	2950	1900	9930	4530	8880	5530	3370	1800	419	3290
24	1400	3110	3850	1850	9620	4250	7750	6230	3050	1670	371	2950
25	1500	2940	5460	1850	9170	3990	6950	6990	2700	1540	350	2380
26	1570	2740	5090	1800	8640	3930	6360	7130	2410	1440	338	1950
27	1480	2540	4540	1750	7680	6660	5730	7030	2180	1340	320	1640
28	1430	3130	6140	1750	6700	11200	6200	7020	2020	1280	342	1430
29	1440	4800	7890	1700	---	8710	4710	6650	2120	1220	339	1280
30	1430	5070	7030	1750	---	7040	4380	5930	2820	1140	340	1160
31	1500	---	6890	1700	---	6540	---	4980	---	1120	456	---
TOTAL	54559	120260	260000	93260	144370	161590	401800	147940	77350	139070	19841	37871
MEAN	1760	4009	8387	3008	5156	5213	13390	4772	2578	4486	640	1262
MAX	5300	8450	21400	6550	10500	11200	28500	7130	4450	9720	1360	4580
MIN	691	1980	2950	1700	1250	3730	4380	3190	1690	1120	320	375
CFSM	.41	.93	1.95	.70	1.20	1.21	3.11	1.11	.60	1.04	.15	.29
IN.	.47	1.04	2.25	.81	1.25	1.40	3.47	1.28	.67	1.20	.17	.33
AC-FT	108200	238500	515700	185000	286400	320500	797000	293400	163400	275800	39360	75120
CAL YR 1982 TOTAL	1863657			MEAN 5106	MAX 24400	MIN 270	CFSM 1.19	IN 16.11	AC-FT 3697000			
WTR YR 1983 TOTAL	1657911			MEAN 4542	MAX 28500	MIN 320	CFSM 1.06	IN 14.33	AC-FT 3288000			

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394, 300 ft downstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel. Records of specific conductance are obtained from suspended sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 20, 1979, Feb. 12, 1980; minimum daily, 190 micromhos Aug. 10, 1977.

WATER TEMPERATURES: Maximum daily, 34.0°C July 20, 1980; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,550 mg/L June 25, 1981; minimum daily mean, 1 mg/L Mar. 8, 9, 12, 1978.

SEDIMENT LOADS: Maximum daily, 499,000 tons Mar. 21, 1978; minimum daily, 1.5 tons Feb. 8, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 740 micromhos June 26; minimum daily, 225 micromhos Apr. 3.

WATER TEMPERATURES: Maximum daily, 31.0°C July 21-24, Aug. 9, 10, 17-21, 27-30; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,210 mg/L Apr. 2; minimum daily mean, 19 mg/L Jan. 22.

SEDIMENT LOADS: Maximum daily, 139,000 tons Apr. 2; minimum daily, 37 tons Aug. 29.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	610	620	530	490	590	550	510	480	620	620	---	540
2	610	530	390	550	610	580	285	630	620	---	---	540
3	600	520	290	590	510	590	225	620	610	---	560	510
4	580	590	340	610	510	580	250	570	620	---	570	510
5	560	500	350	630	480	600	300	555	630	---	520	500
6	515	500	300	620	470	610	370	610	640	---	570	430
7	510	550	290	610	470	580	420	620	660	---	580	410
8	510	600	350	630	490	560	470	640	660	---	560	410
9	530	620	410	630	510	590	430	660	660	---	520	520
10	510	630	490	610	540	570	380	660	670	480	520	520
11	420	570	550	600	570	610	420	630	650	---	520	520
12	310	510	610	620	590	640	460	660	670	---	520	520
13	330	430	610	610	600	670	520	660	690	---	420	410
14	380	430	640	630	590	640	480	660	680	---	420	420
15	450	420	610	630	550	620	520	660	680	---	360	420
16	490	460	620	600	420	630	520	670	670	610	360	420
17	520	550	620	630	340	650	510	560	610	630	370	420
18	550	600	630	610	340	640	450	660	600	630	360	460
19	550	610	620	700	340	640	520	630	640	660	380	280
20	550	630	620	700	340	640	550	650	670	---	400	260
21	530	620	620	680	340	660	560	640	680	---	360	260
22	550	620	610	670	340	660	570	540	690	---	360	400
23	570	610	610	610	350	640	590	480	620	---	460	480
24	560	620	530	640	360	630	600	520	660	---	490	340
25	570	630	500	650	390	660	600	560	690	---	500	380
26	570	630	490	640	430	640	610	560	740	---	520	500
27	570	630	530	650	460	520	560	600	---	---	520	530
28	600	600	510	600	490	420	640	---	---	---	520	560
29	610	510	490	610	---	460	620	590	---	---	540	600
30	620	525	520	620	---	500	600	580	690	---	500	610
31	620	---	440	590	---	520	---	630	---	---	520	---

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	14.0	7.0	1.0	.0	6.0	6.0	17.0	19.0	28.0	30.0	28.0
2	23.0	14.0	11.0	1.0	.0	9.0	6.0	14.0	19.0	26.0	30.0	28.0
3	21.0	10.0	12.0	.0	.0	10.0	5.0	14.0	19.0	27.0	29.5	28.0
4	21.0	10.0	12.0	.0	.0	11.0	5.0	15.0	20.0	27.0	30.0	28.0
5	21.0	10.0	8.0	1.0	.0	11.0	5.0	15.5	18.0	26.0	30.0	26.0
6	21.0	9.0	7.0	3.0	.0	11.0	5.0	18.0	19.0	25.0	30.0	25.0
7	20.0	10.0	5.0	2.0	.0	10.0	5.0	15.0	21.0	24.0	30.0	26.0
8	19.0	8.5	5.0	2.0	.0	7.0	7.0	16.0	22.0	24.0	30.0	27.0
9	19.0	10.0	2.0	2.0	.0	5.0	7.0	16.0	22.0	25.0	31.0	27.0
10	17.0	10.0	2.0	2.0	.0	5.0	5.0	17.0	24.0	25.0	31.0	27.0
11	17.0	11.0	2.0	1.0	.0	5.0	6.0	17.0	24.0	28.0	30.0	26.0
12	16.0	8.0	1.0	.0	.0	3.0	8.0	15.0	25.0	27.0	30.0	24.0
13	14.0	7.0	1.0	1.0	1.0	5.0	9.0	18.0	26.0	28.0	28.0	24.0
14	14.0	7.0	1.0	1.0	2.0	6.0	7.0	15.0	23.0	28.0	28.0	24.0
15	14.0	5.0	1.0	1.0	2.0	7.0	7.0	17.0	25.0	28.0	28.0	17.0
16	14.0	5.0	1.0	1.0	2.0	9.0	7.0	18.0	24.0	29.0	30.0	17.0
17	14.0	5.0	1.0	.0	2.0	9.0	7.0	16.0	26.0	29.0	31.0	23.0
18	15.0	5.0	3.0	.0	4.0	8.0	7.0	18.0	22.0	29.0	31.0	24.0
19	15.0	7.0	2.0	.0	4.0	8.0	8.0	15.0	25.0	29.0	31.0	20.0
20	11.0	7.0	2.0	.0	---	5.0	10.0	17.0	26.0	30.0	31.0	17.0
21	11.0	7.0	3.5	.0	7.0	4.0	10.0	17.0	26.0	31.0	31.0	17.0
22	10.0	8.0	4.0	.0	5.0	5.0	12.0	17.0	27.0	31.0	29.0	15.0
23	11.0	5.0	5.0	.0	6.0	6.0	12.0	17.0	27.0	31.0	28.0	15.0
24	11.0	5.0	5.0	.0	5.0	6.0	14.0	18.0	27.0	31.0	28.0	15.0
25	10.0	4.0	6.0	.0	5.0	5.0	15.0	18.0	29.0	30.0	28.0	16.0
26	10.0	4.0	6.0	.0	5.0	5.0	16.0	19.0	28.0	30.0	28.0	16.0
27	10.0	4.0	5.0	.0	5.0	4.0	16.0	19.0	28.0	29.0	31.0	19.0
28	10.0	4.0	2.0	.0	5.5	4.0	17.0	20.0	28.0	30.0	31.0	19.0
29	12.0	4.0	2.0	.0	---	4.0	17.0	18.0	26.0	30.0	31.0	21.0
30	12.0	4.5	1.0	---	---	5.0	17.0	18.0	27.0	30.0	31.0	21.0
31	14.0	---	1.0	---	---	5.0	---	18.0	---	30.0	28.5	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)										
1	49	120	90	503	290	3330	1050	18600	64	294	355	5520
2	47	108	455	3720	2140	89000	600	10000	87	388	327	4110
3	53	115	316	2250	2040	118000	460	7540	150	628	290	3190
4	50	103	481	4740	1170	55900	377	6080	125	489	286	2970
5	47	93	807	8370	1150	54000	264	3560	93	352	262	2640
6	48	94	702	5670	1300	72700	290	3300	54	197	238	2660
7	47	89	455	3100	1190	63300	285	2990	40	140	482	6950
8	44	82	207	1270	860	40600	228	2240	30	101	576	8820
9	167	505	163	929	720	24700	200	1850	30	105	584	9210
10	398	2650	140	748	580	16000	200	1780	53	193	912	14400
11	1000	12800	255	1680	460	10900	214	1860	49	198	772	11500
12	1440	20600	732	9760	293	5540	189	1560	37	190	528	7740
13	860	10200	1310	29300	362	5620	162	1270	60	373	349	4770
14	492	4170	1360	31000	292	3810	185	1350	176	1330	287	3430
15	299	1820	1100	21600	223	2520	154	1060	440	4870	259	2930
16	187	980	830	16800	180	1980	157	1060	1100	23800	210	2330
17	123	578	595	9850	150	1620	135	838	1280	36300	194	2140
18	91	391	500	7300	163	1670	325	1840	2170	69200	210	2370
19	100	416	369	4510	204	1930	88	463	1580	37900	213	2520
20	238	1140	322	3450	183	1660	42	210	1120	28800	269	3470
21	166	744	281	2780	168	1440	30	154	970	24800	360	4780
22	75	314	243	2260	167	1300	19	100	970	24200	300	3860
23	38	146	254	2250	141	1120	21	108	920	24700	278	3400
24	31	117	237	1990	740	7690	22	110	820	21300	235	2700
25	30	121	188	1490	870	12800	36	180	680	16800	180	1940
26	30	127	150	1110	2130	29300	46	224	560	13100	180	1910
27	30	120	130	892	790	9680	59	279	450	9330	1110	20000
28	27	104	250	2110	690	11400	50	236	370	6690	1970	59600
29	29	113	510	6610	1240	26400	40	184	---	---	1150	27000
30	29	112	460	6300	1790	34000	39	184	---	---	650	12400
31	30	121	---	---	1780	33100	53	243	---	---	480	8480
TOTAL	---	59193	---	193332	---	743010	---	71453	---	336768	---	249740

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	591	13700	241	2690	460	5530	1020	11600	83	233	69	86
2	2210	139000	204	2260	459	4820	2140	32400	120	418	68	107
3	1630	125000	218	2510	647	6990	1850	25700	151	554	108	295
4	1190	89300	740	9530	580	5870	1110	16900	142	475	131	330
5	850	61000	977	11400	395	3520	1300	22200	133	391	138	288
6	680	46100	494	5880	293	2310	1050	19900	128	342	147	269
7	572	29300	402	4980	257	1830	769	15800	126	311	152	241
8	605	26300	395	4860	262	1750	568	12500	132	351	147	214
9	602	27600	315	3730	241	1530	478	11400	99	176	111	137
10	557	27700	290	3320	230	1360	530	13500	102	278	78	90
11	530	24500	448	5200	188	1040	421	11000	68	131	67	90
12	525	20400	349	4010	160	834	321	8350	52	56	51	68
13	502	17500	283	3110	155	799	388	9430	63	105	48	55
14	500	15700	262	2660	135	674	392	7410	55	86	47	48
15	588	17300	244	2500	177	836	368	5040	45	66	50	51
16	640	18300	250	2320	190	872	358	3560	49	68	54	62
17	430	12200	303	2710	196	894	330	2730	57	74	47	51
18	348	10200	248	2140	870	4840	270	1980	57	71	41	44
19	312	9600	207	1780	398	2430	227	1510	57	69	761	13300
20	260	8210	262	2450	237	1380	245	1470	69	79	1730	16200
21	245	7410	423	5130	221	1340	229	1270	75	79	1100	5820
22	287	7830	1480	21600	349	2930	220	1130	68	78	280	1190
23	345	8270	1600	23900	542	4930	214	1040	53	60	985	8750
24	320	6700	790	13300	488	4020	220	992	38	38	760	6050
25	278	5220	578	10900	387	2820	232	965	47	44	420	2700
26	253	4340	606	11700	309	2010	192	746	52	47	229	1210
27	287	4440	469	8900	267	1570	151	546	48	41	152	673
28	298	4180	429	8130	231	1260	111	384	47	43	132	510
29	270	3430	465	8350	260	1490	84	277	40	37	114	394
30	258	3050	450	7200	429	3270	70	215	51	47	101	316
31	---	---	443	5960	---	---	70	212	86	106	---	---
TOTAL	---	793780	---	205110	---	75749	---	242157	---	4954	---	59639
TOTAL LOAD FOR YEAR:			3034885	TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW INSTANTANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	
NOV 08...	1300	8.0	2280	178	1100	--	--	
DEC 21...	1330	2.5	3210	169	1460	--	--	
FEB 28...	1300	5.0	6690	344	6210	37	41	
MAY 05...	1200	17.0	4190	1110	12600	67	68	
JUN 30...	1245	27.0	3000	313	2540	44	51	
AUG 31...	1715	29.0	453	63	77	--	--	
DATE		SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 08...		--	--	--	--	--	--	98
DEC 21...		--	--	--	--	--	--	83
FEB 28...		44	53	83	88	97	100	--
MAY 05...		75	90	--	--	--	--	100
JUN 30...		60	73	--	--	--	--	97
AUG 31...		--	--	--	--	--	--	99

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM.							
				% FINER THAN .125 MM (80165)	% FINER THAN .250 MM (80166)	% FINER THAN .500 MM (80167)	% FINER THAN 1.00 MM (80168)	% FINER THAN 2.00 MM (80169)	% FINER THAN 4.00 MM (80170)	% FINER THAN 8.00 MM (80171)	% FINER THAN 16.0 MM (80172)
NOV 08...	1300	2280	3	0	7	55	88	97	99	100	--
MAY 05...	1200	4190	5	0	4	56	92	96	97	98	100

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PERCENT) (00301)	BAROMETRIC PRESSURE (MM HG) (00025)	COLIFORM, FECAL, UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CaCO3) (00900)	
													NOV , 1982	08...	1300	2280	595	--	8.0	40	10.6	90	--	1800	K17000	290
DEC 21...	1330	3210	635	--	2.5	31	13.9	104	--	390	8300	310	
FEB , 1983	28...	1300	6690	475	7.8	5.0	68	12.6	101	746	200	1700	240
MAY 05...	1200	4190	520	8.1	17.0	500	9.9	104	749	1800	K20000	250	
JUN 30...	1245	3000	655	8.3	27.0	92	7.3	94	744	E22000	K13000	320	
AUG 31...	1715	453	522	8.7	29.0	18	12.4	165	749	50	190	250	

DATE	HARDNESS, NONCARBONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB AS CaCO3 (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	
													NOV , 1982	08...	76	75	26	11	7	.3	4.0	219	44	23	.30	17
DEC 21...	82	79	27	11	7	.3	2.1	227	51	22	.30	17	
FEB , 1983	28...	67	65	20	7.1	6	.2	3.2	178	36	20	.30	14
MAY 05...	75	64	21	9.0	7	.3	2.7	172	44	15	.30	11	
JUN 30...	85	86	26	9.5	6	.2	1.9	237	41	23	.30	17	
AUG 31...	51	57	27	16	12	.5	2.9	203	62	20	.30	5.8	

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	
													NOV , 1982	08...	367	333	.50	2260	9.5	<.060	3.20	.170	1.1	.160	.350	178
DEC 21...	402	346	.55	3480	12	.060	1.10	.090	.77	.110	.250	169	
FEB , 1983	28...	305	273	.41	5510	6.8	.100	1.80	.150	1.1	.160	.360	344
MAY 05...	309	271	.42	3500	7.2	.120	1.50	.090	1.7	.090	.550	1110	
JUN 30...	411	347	.56	3330	8.4	<.060	1.70	.180	1.6	.230	.510	313	
AUG 31...	311	313	.42	380	1.1	<.010	2.70	.030	.55	.030	.180	63	

K Results based on colony count outside the acceptable range (non-ideal colony count).

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER X FINER (70331)	SED. SUSP. FALL DIAM. % FINER X FINER (70342)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV , 1982												
08...	1100	98	--	2	20	120	<1	<1	<1	<3	4	13
DEC												
21...	1460	83	--	--	--	--	--	--	--	--	--	--
FEB , 1983												
28...	6210	--	83	2	30	110	<1	<1	<1	<3	3	26
MAY												
05...	12600	100	--	1	60	120	<1	<1	<1	<3	2	50
JUN												
30...	2540	97	--	--	--	--	--	--	--	--	--	--
AUG												
31...	77	99	--	3	<10	130	<1	<1	<1	<3	1	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV , 1982											
08...	<1	15	5	--	<10	3	2	<1	200	<6.0	6
DEC											
21...	--	--	--	--	--	--	--	--	--	--	--
FEB , 1983											
28...	<1	12	7	<.1	<10	1	2	<1	150	<6.0	29
MAY											
05...	1	14	2	.1	<10	19	2	<1	170	<6.0	6
JUN											
30...	--	--	--	--	--	--	--	--	--	--	--
AUG											
31...	3	12	14	<.1	<10	6	1	<1	190	<6.0	8

05474500 MISSISSIPPI RIVER AT KEOKUK, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°23'37", long 91°22'27", in SE1/4 SW1/4 sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi upstream from bridge on U.S. Highway 136, 2.7 mi upstream from Des Moines River, and at mile 354.2 upstream from Ohio River.

DRAINAGE AREA.--119,000 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft NGVD (levels by Corps of Engineers); Jan. 1, 1978, to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi upstream; zero of gage was set to low-water mark of 1864, or 496.52 ft NGVD.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records furnished by Union Electric Co.

AVERAGE DISCHARGE.--105 years, 63,320 ft³/s, 7.23 in/yr, 45,880,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 344,000 ft³/s Apr. 24, 1973; maximum gage height, 23.35 ft Apr. 24, 1973; minimum daily discharge, 5,000 ft³/s Dec. 27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1851, reached a stage of 21.0 ft, present site and datum, estimated as 13.5 ft at Galland, discharge, 360,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 224,000 ft³/s Apr. 6; minimum daily, 31,200 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39600	113000	118000	107000	68000	125000	168000	187000	146000	106000	65500	53500
2	43300	120000	148000	103000	63500	119000	196000	178000	141000	110000	63600	49600
3	48200	117000	176000	98800	60100	117000	202000	178000	140000	117000	61800	43100
4	51800	120000	178000	92600	55600	119000	213000	170000	131000	126000	61200	43800
5	50700	122000	180000	102000	51200	117000	222000	168000	123000	130000	55700	46100
6	52100	113000	179000	95400	48300	117000	224000	162000	113000	138000	51000	48600
7	52000	103000	171000	98000	48600	121000	214000	160000	107000	141000	50600	53900
8	53100	96500	168000	98400	49800	125000	200000	156000	102000	142000	51300	55700
9	57600	91000	166000	93800	48600	134000	196000	151000	92800	141000	53200	57100
10	59600	84400	161000	87600	50500	144000	194000	146000	94000	135000	49900	49800
11	62300	84800	157000	88600	52900	149000	192000	140000	94400	135000	54700	42100
12	69300	86800	145000	79700	56700	155000	193000	140000	98500	138000	52000	41300
13	71900	99200	130000	83800	56000	162000	191000	139000	92600	135000	52200	31200
14	71700	115000	108000	75500	60600	173000	186000	136000	85500	129000	48300	36200
15	70800	124000	86100	65800	67300	184000	186000	137000	90300	120000	48300	44300
16	75400	131000	92500	70100	74900	194000	182000	138000	76700	114000	35800	48800
17	76600	135000	97400	65300	87400	200000	186000	138000	72800	110000	37900	48800
18	81000	135000	98600	57600	97900	204000	187000	136000	74900	107000	39400	45900
19	78200	136000	93300	49900	110000	211000	189000	135000	74600	106000	39200	49700
20	82300	137000	93000	45100	119000	217000	193000	137000	77800	104000	39500	69900
21	85300	139000	96700	47400	110000	218000	197000	138000	78300	104000	41800	65500
22	88000	140000	95100	51500	116000	217000	201000	139000	79300	101000	48500	62400
23	86500	142000	93000	56500	130000	214000	202000	139000	76000	102000	50300	68900
24	89600	139000	95700	61500	138000	208000	202000	140000	75600	103000	46000	69900
25	87800	134000	106000	65500	142000	203000	204000	147000	72700	94900	41700	74300
26	87700	133000	111000	69200	142000	199000	205000	152000	72300	87900	42800	84500
27	93200	125000	110000	67100	137000	198000	204000	155000	76300	86700	42000	91500
28	98100	117000	107000	66000	131000	197000	202000	163000	74100	75100	48100	94600
29	102000	116000	112000	66500	---	190000	197000	188000	87800	73800	53400	94700
30	104000	116000	109000	68300	---	180000	193000	184000	95900	66000	60600	92400
31	110000	---	113000	67900	---	171000	---	181000	---	65500	60100	---
TOTAL	2279700	3864700	3894400	2346400	2369900	5282000	5921000	4668000	2816200	3440900	1537400	1718200
MEAN	73540	118800	125600	75690	84640	170400	197400	150800	93870	111000	49590	57270
MAX	110000	142000	180000	107000	142000	218000	224000	187000	146000	142000	65500	94700
MIN	39600	84400	86100	45100	48300	117000	168000	135000	72300	65000	35800	31200
CFSM	.62	1.00	1.06	.64	.71	1.43	1.66	1.27	.79	.93	.42	.48
IN.	.71	1.11	1.22	.73	.74	1.65	1.85	1.46	.88	1.08	.48	.54
AC-FT	4522000	7071000	7725000	4654000	4701000	10480000	11740000	9259000	5586000	6826000	3049000	3408000

CAL YR 1982	TOTAL	36153500	MEAN	99050	MAX	225000	MIN	32000	CFSM	.83	IN	11.30	AC-FT	71710000
WTR YR 1983	TOTAL	39838800	MEAN	109100	MAX	224000	MIN	31200	CFSM	.92	IN	12.45	AC-FT	79020000

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at public access 0.5 mi downstream from discharge station.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 612 micromhos Jan. 21, 1980; minimum daily, 310 micromhos Apr. 7, 1981.
WATER TEMPERATURES: December 1977 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 612 micromhos Jan. 21, 1980; minimum daily, 310 micromhos Apr. 7, 1981.
WATER TEMPERATURES: Maximum daily, 26.0°C July 13-23, 1980; minimum daily, 0.0° C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, SATURATION (PERCENT) (00301)	BAROMETRIC PRESSURE (MM HG) (00025)	COLIFORM, FECA, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CaCO3) (00900)	
DATE		HARDNESS, NONCARBONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CaCO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)
OCT , 1982													
06...	1145	49900	390	8.1	19.5	17	7.9	87	--	--	200	190	
DEC													
21...	1030	95100	515	8.1	1.0	26	13.9	98	--	K11000	1500	250	
MAR , 1983													
16...	1230	194000	365	8.1	5.0	74	12.8	103	745	550	730	180	
JUL													
05...	1130	12600	430	8.0	26.0	49	5.6	70	754	1000	1100	200	
OCT , 1982													
06...	36	46	18	9.7	10	.3	2.6	151	29	13	.20	6.2	
DEC													
21...	58	62	24	8.9	7	.3	2.5	186	37	18	.20	13	
MAR , 1983													
16...	34	45	16	7.6	8	.3	3.1	145	26	14	.10	10	
JUL													
06...	40	50	19	7.9	8	.2	2.5	163	33	15	.20	7.9	
OCT , 1982													
06...	213	215	.29	28700	1.1	<.150	1.50	.090	--	.120	.170	31	
DEC													
21...	317	278	.43	81400	5.7	.080	2.10	.090	.58	.110	.190	49	
MAR , 1983													
16...	220	210	.30	115000	3.0	.240	2.90	.050	1.4	.080	.470	418	
JUL													
06...	265	234	.36	9020	3.6	<.060	1.40	.120	1.2	.150	.380	179	

K Results based on colony count outside the acceptable range (non-ideal colony count).

MISSISSIPPI RIVER MAIN STEM
05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	ARSENIC DIS- SOLVED (UG/L) AS AS) (01000)	ALUM- INUM, DIS- SOLVED (UG/L) AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L) AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L) AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L) AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L) AS CR) (01030)	COBALT, DIS- SOLVED (UG/L) AS CO) (01035)	COPPER, DIS- SOLVED (UG/L) AS CU) (01040)	IRON, DIS- SOLVED (UG/L) AS FE) (01046)
OCT , 1982											
06...	4150	96	2	20	58	1	<1	<1	<3	4	26
DEC											
21...	12600	96	1	20	68	<1	<1	--	<3	3	43
MAR , 1983											
16...	219000	97	1	30	61	<1	<1	<1	<3	4	76
JUL											
05...	6090	99	1	30	71	<1	<1	2	<3	2	4
DATE	LEAD, DIS- SOLVED (UG/L) AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L) AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L) AS MN) (01056)	MERCURY DIS- SOLVED (UG/L) AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L) AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L) AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L) AS SE) (01145)	SILVER, DIS- SOLVED (UG/L) AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L) AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L) AS V) (01085)	ZINC, DIS- SOLVED (UG/L) AS ZN) (01090)
OCT , 1982											
06...	<1	17	7	<.1	<10	<1	<1	<1	87	<6.0	25
DEC											
21...	<1	8	21	--	<10	1	1	<1	120	<6.0	13
MAR , 1983											
16...	<1	9	70	<.1	<10	<1	1	<1	84	<6.0	6
JUL											
05...	3	11	<1	.1	<10	4	1	<1	110	<6.0	3

DES MOINES RIVER BASIN

05476500 DES MOINES RIVER AT ESTHERVILLE, IA

LOCATION.--Lat 43°23'51", Long 94°50'38", in SW1/4 SE1/4 sec.10, T.99 N., R.34 W., Emmet County, Hydrologic Unit 07100002, on right bank in city park, 1,200 ft downstream from bridge on State Highway 9 at Estherville, 0.1 mi upstream from School Creek, 2.3 mi upstream from Brown Creek, and at mile 404.2.

DRAINAGE AREA.--1,372 mi².

PERIOD OF RECORD.--October 1951 to current year. Prior to November 1951, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,247.55 ft NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 336 ft³/s, 3.33 in/yr, 243,400 acre-ft/yr; median of yearly mean discharges, 230 ft³/s, 2.3 in/yr, 167,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s Apr. 12, 1969, gage height, 17.68 ft, from flood-mark; no flow Jan. 16-18, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	1345	1,970	6.81	Apr. 13	2300	5,670	12.39
Mar. 7	1330	3,750	10.23	July 6	0830	*5,970	*12.66
Mar. 15	0615	3,690	10.14				

Minimum daily discharge, 62 ft³/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	199	598	1150	357	269	2090	1990	2730	1060	3640	813	194		
2	316	576	1190	380	259	2470	2430	2910	1020	4550	747	189		
3	386	549	1210	437	247	2670	2930	2950	979	4620	683	181		
4	361	523	1120	461	208	2850	3020	2830	931	4720	630	176		
5	339	498	1080	465	183	3050	3060	2690	877	5170	576	173		
6	325	461	1020	465	194	3330	3080	2580	822	5860	528	165		
7	417	465	929	457	223	3710	3140	2590	780	5340	485	157		
8	510	465	767	441	244	3630	3390	2660	747	4790	449	148		
9	567	477	437	429	232	3490	3580	2840	715	4370	417	143		
10	787	707	441	425	217	3190	3750	3130	674	4060	387	131		
11	742	939	429	406	211	2760	3880	3340	642	3750	361	131		
12	697	1310	453	398	208	2610	4060	3370	624	3440	339	117		
13	659	1150	567	361	220	2810	5210	3320	646	3150	312	110		
14	621	888	757	325	241	3380	5390	3260	1000	2900	298	101		
15	585	792	834	367	256	3640	5270	3120	1120	2670	278	108		
16	545	962	782	350	282	3310	5160	2890	1210	2470	272	115		
17	515	1070	707	322	357	3010	4900	2670	1240	2280	272	106		
18	489	1160	678	339	441	2830	4880	2500	1350	2150	262	102		
19	494	1230	659	332	617	2690	4750	2390	1450	2050	250	110		
20	621	1360	626	322	1160	2580	4520	2270	1800	1930	241	104		
21	678	1370	598	315	1370	2450	4290	2170	2530	1800	229	96		
22	697	1340	576	311	1520	2300	4130	2060	2780	1680	211	89		
23	702	1250	571	301	1870	2110	3960	1940	3010	1610	197	86		
24	717	1050	589	291	1860	1970	3770	1820	2940	1510	186	80		
25	717	757	727	285	1740	1930	3600	1680	2740	1410	192	74		
26	702	953	626	278	1630	1850	3450	1580	2630	1290	192	70		
27	697	1150	567	272	1520	1720	3310	1480	2550	1190	192	65		
28	692	1170	336	272	1900	1670	3140	1400	2520	1100	192	62		
29	678	1190	354	272	---	1600	2970	1320	2830	1030	200	68		
30	659	1170	357	278	---	1540	2820	1230	3270	951	208	93		
31	631	---	368	275	---	1610	---	1140	---	886	206	---		
TOTAL	17745	27580	21505	10979	19679	80850	113830	74860	47487	88367	10805	3544		
MEAN	572	919	694	354	703	2608	3794	2415	1583	2851	349	118		
MAX	787	1370	1210	465	1900	3710	5390	3370	3270	5860	813	194		
MIN	199	461	336	272	183	1540	1990	1140	624	886	186	62		
CFSM	.42	.67	.51	.26	.51	1.90	2.77	1.76	1.15	2.08	.25	.09		
IN.	.48	.75	.58	.30	.53	2.19	3.09	2.03	1.29	2.40	.29	.10		
AC-FT	35200	54700	42660	21780	39030	160400	225800	148500	94190	175300	21430	7030		
CAL YR 1982	TOTAL	172539	MEAN	473	MAX	1370	MIN	10	CFSM	.35	IN	4.68	AC-FT	342200
WTR YR 1983	TOTAL	517231	MEAN	1417	MAX	5860	MIN	62	CFSM	1.03	IN	14.02	AC-FT	1026000

05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'06", in SE1/4 SW1/4 sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002, on left bank 5 ft downstream from First Avenue in city of Humboldt, about 700 ft below dam, 3.2 mi below dam, 3.2 mi upstream from Indian Creek, 3.9 mi upstream from East Fork Des Moines River, and at mile 334.3.

DRAINAGE AREA.--2,256 mi².

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as West Fork Des Moines River at Humboldt.

GAGE.--Water-stage recorder. Datum of gage is 1,053.54 ft NGVD. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for February, which are poor. Daily nonrecording gage readings available in district office for period Mar. 7, 1940, to Sept. 30, 1964. Discharge not published for this period because of extreme regulation at dam 700 ft upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low-flow discharges occasionally affected by minor regulation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 859 ft³/s, 5.17 in/yr, 622,300 acre-ft/yr; median of yearly mean discharges, 580 ft³/s, 4.1 in/yr, 493,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s Apr. 14, 1969, gage height, 15.40 ft; minimum daily, 13 ft³/s Nov. 12, 1976, Jan. 12 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft, discharge, 11,000 ft³/s at present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 4	1945	3,320	7.09	Apr. 16	unknown	*unknown	*unknown
Nov. 13	1000	3,110	6.87	July 3	0745	8,820	11.02
Mar. 8	0530	7,040	9.91				

Minimum daily discharge, 294 ft³/s Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1630	1670	2110	1500	680	4640	4230	4600	1920	5900	1380	408		
2	2250	1580	2150	1540	500	4800	4960	4740	1800	7310	1280	387		
3	2870	1500	2210	1430	550	5000	5320	5150	1730	8650	1190	376		
4	3240	1440	2280	1410	445	5170	5340	5260	1670	8480	1110	363		
5	3180	1390	2300	1330	470	5340	5320	5240	1580	8190	1020	374		
6	2780	1310	2210	1340	440	5980	5520	5080	1500	7550	964	433		
7	2360	1300	2100	1330	400	6740	5730	4880	1430	7100	903	397		
8	2110	1230	1930	1280	410	7000	5860	4550	1360	6770	813	369		
9	2150	1240	1480	1280	420	6610	5900	4220	1290	6520	723	353		
10	2220	1540	1390	1200	445	6340	5960	3970	1230	6470	690	339		
11	2180	2280	1120	1120	450	6430	6050	3940	1110	6480	648	323		
12	2170	2690	938	1180	450	6190	6210	3830	1130	6260	622	307		
13	2160	3010	835	1240	450	5850	6900	3900	1110	5830	597	303		
14	2330	2850	1010	1240	464	5480	8200	3970	1440	5360	586	295		
15	2250	2720	1350	1100	538	5240	9000	4050	2280	4910	566	294		
16	2080	2540	1580	960	531	5460	9600	4090	2700	4500	536	308		
17	1920	2460	1640	920	782	5530	9400	4060	2570	4060	519	320		
18	1790	2390	1600	880	959	5820	8810	4140	2460	3700	512	350		
19	1730	2350	1610	940	1300	5860	8080	4260	2530	3410	505	435		
20	1840	2310	1490	980	1700	5720	7630	4240	2930	3180	475	760		
21	2240	2480	1340	990	2250	5340	7520	4020	3670	2900	488	1200		
22	2400	2530	1300	1030	2980	4880	7250	3750	4300	2650	465	925		
23	2390	2600	1310	980	3550	4500	6910	3450	4390	2450	444	735		
24	2350	2580	1350	960	4100	4200	6560	3180	4330	2350	435	645		
25	2240	2300	1780	880	4660	3950	6190	2940	4290	2260	427	583		
26	2120	2080	2460	780	4410	3810	5860	2740	4260	2080	421	532		
27	2010	1820	2600	740	4520	3530	5560	2590	4330	1940	462	492		
28	1940	1960	2340	650	4920	3180	5280	2420	4390	1830	418	464		
29	1860	2100	1200	730	---	3200	5010	2260	4720	1720	414	449		
30	1800	2110	1400	770	---	3210	4780	2150	5200	1610	423	475		
31	1720	---	1520	720	---	3430	---	2050	---	1500	427	---		
TOTAL	68310	62360	51933	33430	43974	158420	194940	119620	79650	143920	20453	13994		
MEAN	2204	2079	1675	1078	1571	5110	6498	3859	2655	4543	650	456		
MAX	3240	3010	2600	1540	4920	7000	9500	5260	5200	8650	1380	1200		
MIN	1630	1230	835	650	400	3180	4230	2050	1110	1500	414	294		
CFSM	.98	.92	.74	.48	.70	2.27	2.88	1.71	1.18	2.06	.29	.21		
IN.	1.13	1.03	.86	.55	.73	2.61	3.21	1.97	1.31	2.37	.34	.23		
AC-FT	135500	123700	103000	66310	87220	314200	386700	237300	158000	285500	40570	27760		
CAL YR 1982	TOTAL	485745	MEAN	1331	MAX	3670	MIN	65	CFSM	.59	IN	8.01	AC-FT	963500
WTR YR 1983	TOTAL	991004	MEAN	2715	MAX	9600	MIN	294	CFSM	1.20	IN	16.34	AC-FT	1966000

DES MOINES RIVER BASIN

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42°43'25", long 94°11'30", in NW1/4 SE1/4 sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft upstream from old mill dam, in city park at east edge of Dakota City, 500 ft upstream from bridge on county highway P56, 0.6 mi downstream from bridge on State Highway 3, 3.4 mi upstream from confluence with Des Moines River, and at mile 333.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi².

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,038.71 ft NGVD. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather service gage-height telemeter at station.

AVERAGE DISCHARGE.--43 years, 531 ft³/s, 5.51 in/yr, 384,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,800 ft³/s June 21, 1954, gage height, 16.95 ft, from flood-mark, site and datum then in use; minimum daily, 4.8 ft³/s Jan. 11-14, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 24.02 ft, discharge, 17,400 ft³/s at present site. Flood of September 1938 reached a stage of 17.4 ft, discharge, about 22,000 ft³/s, site and datum in use during the period 1940-54.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 7	0530	2,030	11.47	Mar. 17	1500	4,510	14.25
Nov. 16	2015	2,560	12.29	Apr. 16	1315	*7,270	*16.87
Dec. 28	0045	1,890	11.29	July 3	2045	5,750	15.64
Mar. 8	0145	7,000	16.63				

Minimum daily discharge, 57 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1090	1330	1330	1710	375	4180	2980	2290	1320	3460	398	85
2	1630	1260	1340	1630	370	4240	3290	2350	1310	4410	360	78
3	1830	1190	1380	1640	320	4290	3520	2630	1270	5500	328	73
4	1940	1130	1430	1550	285	4400	3780	2770	1210	5490	303	69
5	1960	1070	1530	1450	275	4730	3960	2770	1140	4900	281	69
6	1970	1020	1640	1350	260	5400	4100	2780	1070	4310	258	72
7	2020	981	1660	1250	250	6650	4120	2780	1000	3850	239	68
8	1990	939	1600	1160	250	6870	4100	2690	955	3460	230	67
9	1960	917	1540	1080	255	6350	4030	2530	909	3060	196	72
10	1960	1090	1460	1020	260	5450	4060	2380	853	2720	183	76
11	1950	1480	1300	868	265	4530	4160	2230	787	2420	167	71
12	1870	1910	1160	745	270	4380	4360	2110	736	2170	155	66
13	1820	2170	1190	820	278	4070	5050	2020	704	1970	146	61
14	1780	2250	1190	786	285	3600	6090	1930	970	1810	138	57
15	1730	2370	1170	700	340	3370	6630	1850	1440	1680	130	61
16	1650	2510	1120	640	546	3960	7190	1760	1530	1580	122	68
17	1570	2540	1080	615	920	4470	7000	1690	1560	1490	115	74
18	1490	2420	1060	595	1360	4400	6480	1690	1710	1430	107	81
19	1440	2260	991	595	1860	4220	5930	1870	1860	1370	101	163
20	1510	2120	938	605	2340	4020	5350	2000	2100	1280	94	972
21	1660	2000	890	605	2920	3810	4820	1980	2680	1190	95	899
22	1660	1870	851	590	3510	3580	4400	1920	2970	1100	99	629
23	1650	1800	824	539	3970	3330	4070	1870	3070	1020	97	478
24	1690	1730	878	510	4920	3090	3750	1820	3050	939	91	399
25	1730	1660	1320	450	4260	2870	3460	1760	3000	843	87	342
26	1740	1680	1740	385	4120	2700	3210	1660	2880	746	85	295
27	1700	1480	1800	359	4270	2510	2980	1580	2730	675	97	263
28	1640	1460	1750	408	4170	2390	2760	1500	2750	609	84	236
29	1570	1380	1630	417	---	2370	2590	1410	2970	552	78	217
30	1490	1340	1730	390	---	2290	2410	1350	3150	502	80	206
31	1400	---	1730	381	---	2490	---	1330	---	453	82	---
TOTAL	53090	49257	41252	25843	43503	125010	130620	63300	53684	66989	5026	6367
MEAN	1713	1642	1331	834	1554	4033	4354	2042	1789	2161	162	212
MAX	2020	2540	1800	1710	4920	6870	7190	2780	3150	5500	398	972
MIN	1090	917	824	359	250	2290	2410	1330	704	453	78	57
CFSM	1.31	1.26	1.02	.64	1.19	3.08	3.33	1.56	1.37	1.65	.12	.16
IN.	1.51	1.40	1.17	.73	1.24	3.56	3.71	1.80	1.53	1.91	.14	.18
AC-FT	105300	97700	81820	51260	86290	248000	259100	125600	106500	132900	9970	12630

CAL YR 1982 TOTAL 409899 MEAN 1123 MAX 3260 MIN 50 CFSM .86 IN 11.66 AC-FT 813000
WTR YR 1983 TOTAL 663941 MEAN 1819 MAX 7190 MIN 57 CFSM 1.39 IN 18.88 AC-FT 1317000

05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", long 94°12'04", in NW1/4 SW1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft upstream from Soldier Creek, 1,800 ft downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft downstream from Lizard Creek, and at mile 314.6.

DRAINAGE AREA.--4,190 mi².

PERIOD OF RECORD.--April 1905 to July 1905 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (M).

GAGE.--Water-stage recorder. Datum of gage is 969.38 ft NGVD. See WSP 1728 for history of changes prior to prior to Dec. 8, 1949.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam 0.8 mi upstream from gage. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters and City of Fort Dodge gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years (water years 1914-27, 1947-83), 1,475 ft³/s, 4.78 in/yr, 1,069,000 acre-ft/yr; median of yearly mean discharges, 1,170 ft³/s, 3.8 in/yr, 848,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,600 ft³/s Apr. 8, 1965, gage height, 17.79 ft; maximum gage height, 19.62 ft, from floodmark, June 23, 1947, present site and datum; minimum daily discharge, 14 ft³/s Nov. 3, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 4	1600	7,600	7.07	Mar. 17	1515	13,800	9.35
Nov. 13	1730	7,290	6.85	Apr. 17	0330	19,500	11.45
Dec. 28	0145	6,230	6.41	June 22	0600	11,800	8.86
Mar. 7	1745	18,900	11.22	July 3	unknown	*19,600	*11.76

Minimum daily discharge, 398 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2560	3380	3940	3970	1150	10900	10100	8440	4150	13200	2160	569		
2	4250	3250	4010	3940	1210	11100	11300	8970	3980	16200	1970	542		
3	5310	3020	4140	3640	981	11400	11700	10600	3830	19300	1830	516		
4	5980	2940	4260	3640	854	11500	11600	10800	3670	17900	1690	491		
5	5910	2810	4510	3480	955	11900	11200	10300	3500	15800	1530	488		
6	5460	2690	4610	3420	929	14600	11400	9890	3330	14100	1430	552		
7	5010	2610	4510	3240	866	18100	11700	9790	3170	12700	1330	532		
8	4710	2510	4220	2980	866	17800	11600	9140	3020	11700	1220	489		
9	4840	2460	3580	2980	877	15300	11600	8470	2880	10900	1110	465		
10	5440	2780	3280	2960	880	13600	11900	7870	2710	10400	1040	465		
11	5700	4190	2920	2600	883	12500	12500	7550	2500	9940	964	444		
12	5570	6210	2430	1800	886	12000	13100	7340	2450	9400	894	426		
13	5270	7160	2270	2260	890	11500	15400	7290	2380	8630	849	408		
14	4890	7060	2740	2300	929	10700	17800	7220	3200	7910	814	398		
15	4560	6740	3010	2000	1320	10400	18000	7150	4900	7220	771	431		
16	4230	6320	3160	1720	2120	12000	19100	7050	5420	6620	735	427		
17	3950	5900	3230	1660	2980	13200	19300	6930	5170	6020	701	426		
18	3740	5620	3200	1600	3500	12800	18300	7120	5230	5590	664	453		
19	3660	5500	3180	1700	5200	12200	17300	7990	5540	5270	636	742		
20	3820	5410	3010	1760	7790	11500	16200	8300	6410	4870	611	2210		
21	4460	5340	2760	1800	8350	10600	15100	7840	9260	4470	634	2790		
22	4800	5200	2640	1840	9670	9810	14100	7340	11600	4010	621	2170		
23	4770	5020	2660	1760	10300	9090	13400	6790	10700	3820	591	1650		
24	4610	4780	2910	1630	11700	8520	12600	6350	9830	3640	567	1360		
25	4440	4550	4160	1500	11100	8000	11900	5920	9160	3500	554	1180		
26	4290	4260	5710	1330	10200	7640	11200	5610	8660	3270	547	1040		
27	4130	3810	5990	1150	10100	6920	10500	5480	8730	3060	774	932		
28	4000	3920	5680	1260	10800	6460	9820	5140	9280	2900	764	849		
29	3860	4010	3840	1500	---	6690	9260	4780	9840	2720	650	799		
30	3680	3960	3900	1360	---	6630	8730	4510	11100	2550	636	795		
31	3510	---	4190	1190	---	7890	---	4340	---	2370	588	---		
TOTAL	141410	133410	114650	59970	118286	343250	397710	232310	175600	249980	29875	25039		
MEAN	4562	4447	3698	2257	4225	11070	13260	7494	5853	8064	964	835		
MAX	5980	7160	5990	3970	11700	18100	19300	10800	11600	19300	2160	2790		
MIN	2560	2460	2270	1150	854	6460	8730	4340	2380	2370	547	398		
CFSM	1.09	1.06	.88	.54	1.01	2.64	3.17	1.79	1.40	1.93	.23	.20		
IN.	1.26	1.18	1.02	.62	1.05	3.05	3.53	2.06	1.56	2.22	.27	.22		
AC-FT	280500	264600	227400	138800	234600	680800	788900	460800	348300	495800	59260	49660		
CAL YR 1982	TOTAL	1097077	MEAN	3006	MAX	9310	MIN	125	CFSM	.72	IN	9.74	AC-FT	2176000
WTR YR 1983	TOTAL	2031490	MEAN	5566	MAX	19300	MIN	398	CFSM	1.33	IN	18.04	AC-FT	4029000

DES MOINES RIVER BASIN

05481000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW1/4 SE1/4 sec.18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100005, on right bank 100 ft upstream from bridge on State Highway 17, 2.5 mi south of Webster City, and 3.2 mi downstream from Brewers Creek.

DRAINAGE AREA.--844 mi.²

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (M), WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 989.57 ft NGVD. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 399 ft³/s, 6.42 in/yr, 289,100 acre-ft/yr; median of yearly mean discharges, 340 ft³/s, 5.5 in/yr, 246,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft³/s June 22, 1954, gage height, 18.55 ft; no flow Feb. 7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1896, 19.1 ft about June 10, 1918, from floodmarks from information by local resident, discharge, 21,500 ft³/s. Flood of June 18, 1932, reached a stage of 16.0 ft, discharge, 15,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	0445	3,290	6.97	May 7	1800	2,560	6.15
Feb. 20	0330	5,600	9.08	May 20	1115	2,470	6.07
Mar. 8	0200	5,480	8.98	June 22	0300	2,920	6.57
Mar. 19	0345	3,380	7.03	July 2	1245	*12,500	*13.98
Apr. 2	2115	2,650	6.24	Sep. 21	1345	2,310	5.89
Apr. 12	1200	2,930	6.56				

Minimum daily discharge, 46 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	74	339	456	1680	280	1810	2420	849	722	4050	145	94		
2	148	321	452	1370	200	2040	2580	912	676	9300	129	81		
3	442	296	466	1140	145	2190	2590	1230	639	8000	132	71		
4	567	274	490	1010	160	2270	2330	1550	605	6620	123	64		
5	595	252	740	905	285	2340	2030	1540	572	5350	120	61		
6	537	245	1540	826	260	3320	1950	1420	541	4180	109	85		
7	445	248	1660	756	235	5030	2000	2090	514	2990	101	73		
8	444	233	1500	685	220	5270	1880	2210	497	2120	95	62		
9	426	232	1280	647	215	4810	1830	1650	479	1630	88	61		
10	406	241	1120	677	219	3540	1980	1370	459	1340	83	54		
11	456	476	1060	615	215	2540	2330	1210	441	1130	74	51		
12	492	1310	776	397	208	1970	2520	1130	433	948	70	48		
13	448	1540	689	420	205	1630	2950	1190	423	807	68	48		
14	392	1480	883	470	219	1540	3300	1070	978	706	66	46		
15	352	1410	785	430	694	1680	3450	960	1500	644	64	61		
16	316	1210	660	450	1310	2440	3600	866	1470	591	62	62		
17	289	977	580	470	1870	2920	3650	806	1330	534	60	61		
18	260	800	570	465	2380	3220	3250	905	1860	490	58	57		
19	462	740	530	460	3860	3260	2800	1950	2800	438	53	235		
20	768	729	490	400	5410	2840	2420	2400	2530	395	50	1170		
21	751	746	470	380	4860	2360	2190	2070	2680	354	62	2230		
22	829	752	475	350	4900	1960	1940	1770	2850	323	66	1920		
23	778	612	480	330	4530	1700	1720	1510	2560	295	56	1370		
24	662	612	1130	300	3750	1520	1530	1320	2200	267	53	863		
25	575	590	2320	280	2930	1400	1380	1180	1850	254	83	695		
26	509	554	2630	245	2230	1310	1250	1040	1520	237	58	529		
27	467	539	2400	230	1900	1120	1130	969	1450	216	170	452		
28	444	499	3220	230	1740	1130	1020	928	1940	209	163	395		
29	426	499	2810	260	---	1190	938	867	2120	221	109	354		
30	392	484	2090	410	---	1220	874	827	3010	193	138	314		
31	363	---	1860	330	---	1800	---	779	---	174	127	---		
TOTAL	14515	19240	36612	17618	45430	73370	65832	40568	41649	55006	2835	11668		
MEAN	468	641	1181	568	1623	2367	2194	1309	1388	1774	91.5	389		
MAX	829	1540	3220	1680	5410	5270	3650	2400	3010	9300	170	2230		
MIN	74	232	452	230	145	1120	874	779	423	174	50	46		
CFSM	.56	.76	1.40	.67	1.92	2.81	2.60	1.55	1.65	2.10	.11	.46		
IN.	.64	.85	1.61	.78	2.00	3.23	2.90	1.79	1.84	2.42	.12	.51		
AC-FT	28790	38160	72620	34950	90110	145500	130600	80470	82610	109100	5620	23140		
CAL YR 1982	TOTAL	281873	MEAN	772	MAX	6170	MIN	10	CFSM	.92	IN	12.42	AC-FT	559100
WTR YR 1983	TOTAL	424343	MEAN	1163	MAX	9300	MIN	46	CFSM	1.38	IN	18.70	AC-FT	841700

DES MOINES RIVER BASIN

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05481300 DES MOINES RIVER NEAR STRATFORD, IA.

LOCATION.--Lat 42°15'04", long 93°59'52", in NW1/4 NE1/4 sec.21, T.85 N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft downstream from bridge on State Highway 175, 0.1 mi downstream from Skillet Creek, 4.0 mi southwest of Stratford, 7.3 mi downstream from Boone River and at mile 276.7.

DRAINAGE AREA.--5,452 mi².

PERIOD OF RECORD.--April 1920 to current year in reports of Geological Survey. Published as "near Boone" 1920-67. Monthly discharge only for some periods, published in WSP 1308. December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1925-27, 1934. WSP 1708: 1955.

GAGE.--Water-stage recorder. Datum of gage is 894.00 ft NGVD. Prior to May 1, 1920, nonrecording gage 16.6 mi downstream at datum 23.49 ft lower. Oct. 9, 1924, to Jan. 10, 1933, nonrecording gage 17.6 mi downstream at datum 28.53 ft lower. Jan. 11, 1933, to Sept. 30, 1934, nonrecording gage 17.9 mi downstream at datum 22.25 ft lower. Oct. 1, 1934 to Feb. 6, 1935, nonrecording gage and Feb. 7, 1935 to Sept. 30, 1967, water-stage recorder 17.9 mi downstream at datum 21.84 ft lower.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam at Fort Dodge. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage-height telemeters at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years, 1,882 ft³/s, 4.69 in/yr, 1,364,000 acre-ft/yr; median of yearly mean discharges, 1,610 ft³/s, 4.0 in/yr, 1,166,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,400 ft³/s June 22, 1954, gage height, 25.35 ft, from graph based on hourly gage readings, site and datum then in use; no flow for a short time on Jan. 9, 25, 1938, caused by manipulation of gates in control dam, site then in use; minimum unregulated daily discharge, 13 ft³/s Jan. 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft, from high-water mark, site and datum then in use, discharge, 43,600 ft³/s. Flood of June 22, 1954, reached a stage of 29.7 ft, from floodmark, present site and datum, discharge, 54,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0245	8,830	12.68	Apr. 17	0615	24,300	20.35
Dec. 7	0300	7,030	11.46	May 8	0230	13,300	15.35
Dec. 28	unknown	11,300	14.28	May 20	1600	11,500	14.31
Mar. 8	1515	24,300	20.33	June 22	2315	14,800	16.13
Mar. 18	0745	16,600	17.06	July 3	0930	*29,200	*22.22

a From graph based on wire-weight gage readings.

Minimum daily discharge, 431 ft³/s Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	3850	4370	5800	1480	12800	12900	9250	5270	17900	2490	774
2	3180	3700	4370	5200	1320	13000	14800	9580	5070	21500	2260	714
3	4800	3410	4590	4800	1200	13400	15500	11100	4870	28600	2070	663
4	5850	3150	4160	4500	1120	13700	15100	12700	4660	26900	1930	630
5	6280	3090	5430	4300	1090	14100	14200	12500	4440	23900	1780	597
6	5990	2960	6890	4050	1110	16300	14000	11900	4210	21100	1630	608
7	5480	2840	6920	3800	1110	22200	14400	12400	4000	18300	1530	657
8	5280	2740	6410	3600	1100	24100	14400	12900	3820	15900	1410	624
9	5470	2700	5620	3500	1090	22600	14200	11400	3660	13900	1310	575
10	5560	2690	4760	3400	1090	19900	14700	10100	3500	12700	1210	542
11	6010	3590	3700	2900	1100	16700	15500	9360	3330	11800	1120	531
12	6040	6610	3100	2400	1100	14900	16700	8890	3130	11100	1040	505
13	5830	8860	2750	2150	1090	13800	19300	8780	3080	10300	978	480
14	5470	8740	3050	2400	1090	12800	22000	8620	4250	9470	935	465
15	5100	8350	3400	2200	1100	12200	23300	8380	6500	8700	894	480
16	4710	7840	3650	2100	1500	13400	23800	8170	7650	7980	841	431
17	4440	7180	3750	2080	3500	15800	24100	8010	7590	7340	799	505
18	4170	6650	3890	2140	6000	16600	23000	8080	8040	6790	761	495
19	4110	6460	3820	2180	13600	16200	21400	10000	9270	6550	720	613
20	5070	6290	3650	2300	15300	15400	19800	11400	9430	6080	693	1690
21	5100	6200	3340	2300	14900	14100	18300	11000	11100	5570	700	4620
22	5700	6160	3230	2230	15200	12700	16800	10000	13700	5090	761	4890
23	5760	5920	4140	2120	15900	11500	15500	9120	14300	4640	697	3840
24	5520	5580	6630	2000	15400	10700	14400	8380	13000	4380	652	2860
25	5250	5290	8500	2300	15500	9960	13400	7830	11900	4160	635	2250
26	5020	5060	9760	1550	13400	9480	12500	7230	11000	3890	663	1930
27	4820	4470	10900	1420	12200	8840	11700	6880	10600	3580	738	1670
28	4650	4450	9300	1400	12400	8040	11000	6670	12100	3370	1160	1490
29	4480	4490	6770	1700	---	8060	10300	6240	13700	3320	979	1350
30	4260	4470	6440	2320	---	8270	9680	5860	15900	2980	894	1250
31	4040	---	6000	1620	---	9850	---	5540	---	2740	876	---
TOTAL	154780	153790	163290	86760	171990	431400	486680	288270	233070	330530	35156	38729
MEAN	4993	5126	5267	2799	6143	13920	16220	9299	7769	10660	1134	1291
MAX	6280	8860	10900	5800	15900	24100	24100	12900	15900	28600	2490	4890
MIN	1340	2690	2750	1400	1090	8040	9680	5540	3080	2740	635	431
CFSM	.92	.94	.97	.51	1.13	2.55	2.98	1.71	1.43	1.96	.21	.24
IN.	1.06	1.05	1.11	.59	1.17	2.94	3.32	1.97	1.59	2.26	.24	.26
AC-FT	307000	305000	323900	172100	341100	855700	965300	571800	462300	656600	69730	76820

CAL YR 1982	TOTAL	1470107	MEAN	4028	MAX	15000	MIN	200	CFSM	.74	IN	10.03	AC-FT	2916000
WTR YR 1983	TOTAL	2574445	MEAN	7053	MAX	28600	MIN	431	CFSM	1.29	IN	17.57	AC-FT	5106000

DES MOINES RIVER BASIN

05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE 1/4, SW 1/4 sec.30, T.80 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi northwest of Saylorville, 4.2 mi upstream from Beaver Creek, and at mile 213.7.

DRAINAGE AREA.--5,823 mi².

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft diameter concrete conduit through dam. Ungated chute spillway 430 ft in length at right end of dam at elevation 884 ft, contents, 570,000 acre-ft. Conservation pool at elevation 833 ft, contents, 74,000 acre-ft, surface area, 5,400 acres. Flood pool elevation at 850 ft, contents, 676,000 acre-ft, surface area, 16,700 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 561,000 acre-ft Apr. 6, 7, 1979; maximum elevation, 883.81 ft Apr. 5, 1979; minimum daily contents, 66,900 acre-ft Oct. 13,19-21, 1979; minimum elevation, 832.61 ft Jan. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 535,000 acre-ft Apr. 22; maximum elevation, 881.20 ft Apr. 23; minimum daily contents, 83,300 acre-ft Nov. 28; minimum elevation, 832.72 ft Nov. 28.

Capacity table (elevation, in feet, and contents, in acre-feet)

805	360	833	74,000	884	570,000
810	2,300	840	116,000	890	676,000
815	7,700	850	190,000	900	938,000
820	19,000	860	278,000	910	1,320,000
830	58,600	880	511,000	915	1,530,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91400	92800	85600	97300	86900	140000	163000	462000	306000	212000	211000	92500
2	91400	92700	85600	91800	85800	138000	172000	451000	294000	244000	193000	92400
3	94100	91800	85600	87500	85300	137000	188000	445000	284000	282000	177000	92200
4	98000	91200	85600	86200	85200	137000	210000	442000	275000	332000	163000	92000
5	98600	89700	87300	86400	85200	139000	238000	441000	266000	374000	150000	92100
6	94600	88300	88300	86900	85200	144000	264000	442000	257000	402000	139000	92600
7	90400	86800	90200	86400	85300	155000	288000	443000	247000	419000	128000	92700
8	91600	85400	91200	85700	85400	179000	308000	443000	237000	428000	119000	93000
9	91400	85000	91100	85800	85400	203000	323000	442000	228000	433000	110000	93100
10	91000	85200	89800	86100	85500	218000	334000	439000	219000	434000	104000	93500
11	90900	87500	86800	85600	85800	220000	339000	435000	211000	434000	98600	93500
12	91400	88900	85400	84500	85900	232000	349000	431000	202000	431000	96200	93600
13	91100	89900	85700	84700	86200	232000	365000	425000	194000	427000	95700	93400
14	91100	91700	86700	85300	86400	228000	388000	419000	187000	422000	94800	93400
15	90900	91700	88200	86400	86800	221000	415000	413000	180000	416000	94300	94200
16	90800	89200	88600	86600	88100	217000	441000	407000	175000	408000	94400	94200
17	90300	85600	88400	85900	90400	215000	469000	399000	169000	398000	94500	94300
18	90100	85200	88200	85800	90900	217000	494000	394000	162000	389000	94300	94200
19	90500	85000	88200	85600	89100	219000	514000	394000	157000	378000	94000	95200
20	91800	84800	88200	85600	101000	221000	525000	395000	151000	369000	93900	95800
21	92300	84500	88200	85900	119000	220000	532000	396000	146000	359000	94000	96300
22	91100	85200	87700	86400	125000	218000	535000	394000	145000	349000	93900	97900
23	91000	85300	86700	87100	134000	219000	534000	390000	148000	340000	93900	96000
24	90800	85600	87300	87200	139000	215000	531000	386000	151000	332000	93800	94600
25	90600	85800	89900	87000	143000	207000	526000	379000	152000	324000	93700	94300
26	90600	85000	95600	86300	145000	199000	520000	370000	151000	313000	93700	93400
27	91300	84200	104000	85300	145000	192000	510000	361000	151000	298000	93800	92800
28	92600	83300	112000	85100	142000	179000	500000	351000	155000	281000	93900	92600
29	92200	83600	114000	86300	---	171000	488000	341000	171000	262000	94000	92400
30	93000	85300	105000	87600	---	154000	475000	341000	194000	244000	93200	92700
31	90300	---	104000	87600	---	161000	---	318000	---	228000	92600	---
MAX	98600	92800	114000	97300	145000	232000	535000	462000	306000	434000	211000	97900
MIN	90100	83300	85400	84500	85200	137000	163000	318000	145000	212000	92600	92000

WTR YR 1983 MAX 535000 MIN 83300

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°40'50", long 93°40'05", near center of sec.5, T.79 N., R.24 W., Polk County, Hydrologic Unit 07100004, on left bank 5 ft upstream of Fisher bridge on county highway R6F, 2.0 mi west of Saylorville, 2.1 mi downstream from Rock Creek, 2.3 mi downstream from Saylorville Dam, 2.3 mi upstream from Beaver Creek, and at mile 211.4.

DRAINAGE AREA.--5,841 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 787.42 ft NGVD (levels by Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated by Saylorville Lake (Station 05481650) 2.3 mi upstream since Apr. 12, 1977. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--22 years, 2,724 ft³/s, 6.33 in/yr, 1,974,000 acre-ft/yr; median of yearly mean discharges, 2,280 ft³/s, 5.3 in/yr, 1,650,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Apr. 10, 1965, gage height, 24.02 ft; minimum daily, 13 ft³/s Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft June 24, 1954, from floodmarks, discharge, 80,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,900 ft³/s April 28, gage height, 17.06 ft; maximum gage height, 17.16 ft April 21; minimum daily discharge, 478 ft³/s Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1740	4880	4160	10000	2940	13600	12600	16700	11900	8070	11200	1120
2	1610	3960	4410	9220	2620	13500	11600	16600	12000	8410	10900	967
3	1930	3630	4510	8230	1810	13500	9260	15900	11200	8450	10400	953
4	2960	3330	4670	6750	1320	13500	6520	14900	9620	6960	9670	832
5	5630	2740	4980	5400	1130	13500	2930	14400	9510	6330	9050	667
6	8620	3390	6010	4720	1050	13600	2190	13600	9450	9960	8420	612
7	8280	3920	6750	5060	981	13100	2660	13700	9410	12000	7880	606
8	5590	3910	6720	5160	981	13600	4420	13600	9370	12500	7480	606
9	5690	3470	6690	4420	981	13200	7630	13500	8900	12600	6770	606
10	6140	3070	6840	4130	981	15300	10200	13200	8500	12600	5760	606
11	5900	3110	6320	4290	981	14000	11700	12400	8420	12600	4600	594
12	6060	4630	4240	3660	981	13900	13100	12300	8360	12600	2710	594
13	6330	7290	3070	2560	989	14400	11900	12200	8290	12600	1350	594
14	6340	7870	2460	2220	1190	14800	12100	12100	8700	12500	1570	524
15	5850	8910	2430	2150	1530	15400	12300	12000	9650	12500	1430	478
16	5190	9720	3170	2310	1890	15300	12400	12000	10300	12400	933	535
17	5190	9870	4400	2310	2120	15300	12500	12100	10700	12200	800	588
18	4650	8170	4540	2070	5250	15300	12600	12400	11300	11700	1050	588
19	3990	7120	4520	1980	8100	15300	13600	12600	11100	11100	1050	726
20	4140	7090	4510	1880	9480	15300	15900	12800	12000	10600	919	1250
21	5210	6810	4510	1810	10500	15200	16400	13000	12900	9990	832	2120
22	6930	6320	4490	1820	11500	14400	16500	12800	12800	9750	768	4100
23	6040	6080	4360	2030	13000	11800	16600	12700	12800	9370	761	5480
24	6140	5850	4070	2470	13500	11700	16600	12500	12600	9300	832	4690
25	5990	5630	4090	2640	13700	13300	16600	12500	12400	9240	872	3380
26	5560	5810	4170	2650	13800	13700	16700	12400	12400	9640	872	2850
27	4980	5640	5310	2310	13800	14300	16600	12400	12400	11000	886	2400
28	4760	5130	7810	1650	13700	13600	16700	12300	12800	11800	981	1910
29	5130	4540	10100	1280	---	12200	16800	12400	12900	11900	1160	1720
30	5270	4070	11100	1690	---	10800	16700	12300	10300	11800	1700	1400
31	5120	---	10300	2870	---	11600	---	12000	---	11500	1930	---
TOTAL	161960	165960	165710	111740	150705	427900	364310	406400	322980	333970	115536	44096
MEAN	5225	5332	5345	3605	5382	13800	12140	13110	10770	10770	3727	1470
MAX	8620	9870	11100	10000	13800	15400	16800	16700	12900	12600	11200	5480
MIN	1610	2740	2430	1280	981	10800	2190	12000	8290	6330	761	478
AC-FT	321200	329200	328700	221600	298900	848700	722600	806100	640600	662400	229200	87460
CAL YR 1982 TOTAL	1644320		MEAN	4505	MAX	11700	MIN	187	AC-FT	3262000		
WTR YR 1983 TOTAL	2771267		MEAN	7593	MAX	16800	MIN	478	AC-FT	5497000		

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD: Water years 1962 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.

WATER TEMPERATURES: October 1961 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,400 micromhos Feb. 18, 1977; minimum daily, 90 micromhos Feb. 19, 1971. WATER TEMPERATURES: Maximum daily, 36.0°C June 29, 1971; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,400 mg/L May 14, 1970; minimum daily mean, 1 mg/L Jan. 8, 1965. SEDIMENT LOADS: Maximum daily, 148,000 tons June 12, 1966; minimum daily, 1 ton Jan. 8, 1965, Feb. 8-12, 23, 1967.

EXTREMES FOR CURRENT YEAR:

SPECIFIC CONDUCTANCE: Maximum daily, 900 micromhos Nov. 6; minimum daily, 440 micromhos Feb. 18.

WATER TEMPERATURES: Maximum daily, 29.0° June 21, 27, 28 and Sept. 4; minimum daily, 1.0° several days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,210 mg/L June 18; minimum daily mean, 2 mg/L July 18, 19.

SEDIMENT LOADS: Maximum daily, 35,900 tons June 18; minimum daily, 36 tons Sept. 5.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	750	700	710	---	---	---	740	740	---	---	480	---
2	---	820	710	730	---	---	740	680	610	---	490	650
3	780	---	740	---	---	520	740	660	---	---	470	650
4	760	700	740	750	670	460	---	720	---	---	500	---
5	590	800	---	---	---	---	---	730	620	660	---	---
6	680	900	730	730	---	---	---	700	610	660	---	---
7	610	790	700	---	---	---	---	720	680	650	---	650
8	610	770	710	810	---	460	---	680	---	650	---	650
9	620	730	720	---	---	---	---	---	---	650	520	660
10	620	740	750	---	---	750	670	710	---	650	---	620
11	---	720	800	---	470	---	670	---	---	610	---	640
12	---	790	---	810	450	750	670	700	---	575	---	640
13	---	690	720	---	---	---	660	650	770	710	510	640
14	630	690	720	---	450	---	660	720	750	670	510	---
15	620	790	740	850	---	---	730	640	780	---	510	640
16	---	730	820	720	460	750	740	630	810	620	---	640
17	---	820	750	690	---	760	720	620	---	---	---	640
18	640	880	730	770	440	750	---	---	800	670	---	---
19	840	740	780	720	---	750	660	620	---	660	---	650
20	650	820	760	---	450	---	---	710	780	650	490	640
21	650	710	790	---	450	740	670	720	800	---	480	640
22	660	670	810	---	---	---	650	680	770	660	---	---
23	660	660	770	---	---	---	720	680	---	---	590	---
24	660	700	---	650	460	---	660	720	800	---	---	640
25	700	720	780	880	---	---	---	730	---	660	---	---
26	650	720	750	690	---	---	---	700	---	---	620	640
27	640	720	760	---	---	---	---	660	800	680	---	640
28	640	700	---	---	---	---	710	620	800	---	---	---
29	---	710	---	---	---	---	710	710	800	---	650	640
30	780	710	---	740	---	---	730	740	---	---	650	660
31	---	---	---	750	---	---	---	---	---	490	640	---

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	8.0	2.0	1.0	---	---	6.0	9.0	---	---	27.0	---
2	17.0	9.0	2.0	1.0	1.0	3.0	7.0	8.0	14.0	---	26.0	27.0
3	17.0	---	2.0	1.0	1.0	4.5	7.0	8.0	---	---	27.0	---
4	16.0	8.0	1.0	1.0	1.0	3.0	---	9.0	---	---	27.0	29.0
5	16.0	6.0	---	2.0	---	---	---	9.0	19.0	24.0	26.0	---
6	15.0	6.0	2.0	2.0	1.0	4.0	---	10.0	19.0	24.0	---	---
7	16.0	5.0	2.0	1.0	1.0	---	---	11.0	19.0	25.0	27.0	26.0
8	16.0	4.0	2.0	1.0	---	4.0	---	12.0	---	25.0	27.0	25.0
9	16.0	4.0	2.0	1.0	---	---	---	---	---	25.0	26.0	25.0
10	16.0	4.0	2.0	1.0	5.0	4.0	8.0	12.0	---	25.0	---	24.0
11	---	---	2.0	1.0	4.0	4.0	8.0	---	---	25.0	---	25.0
12	---	4.0	---	1.0	3.0	5.0	9.0	12.0	---	25.0	---	25.0
13	---	4.0	2.0	1.0	4.0	---	9.0	12.0	20.0	25.0	26.0	24.0
14	16.0	4.0	2.0	1.0	4.0	5.0	9.0	12.0	21.0	25.0	25.0	---
15	12.0	4.0	2.0	2.0	---	4.0	10.0	11.0	22.0	25.0	27.0	20.0
16	---	3.0	1.0	1.0	4.0	4.0	9.0	10.0	23.0	25.0	27.0	20.0
17	---	6.0	2.0	2.0	---	6.0	9.0	10.0	---	25.0	---	20.0
18	13.0	5.0	2.0	2.0	5.0	5.0	---	---	24.0	25.0	---	---
19	13.0	4.0	2.0	2.0	---	4.0	5.0	14.0	---	26.0	27.0	20.0
20	12.0	4.0	2.0	2.0	4.0	4.0	---	14.0	28.0	27.0	26.0	16.0
21	12.0	---	2.0	2.0	4.0	5.0	10.0	14.0	29.0	---	25.0	16.0
22	11.0	3.0	2.0	2.0	---	---	9.0	16.0	28.0	25.0	25.0	---
23	11.0	2.0	2.0	2.0	---	5.0	10.0	15.0	---	---	27.0	---
24	11.0	3.0	---	1.0	4.0	5.0	11.0	16.0	---	---	27.0	18.0
25	11.0	---	1.0	2.0	3.0	---	---	14.0	25.0	25.0	27.0	---
26	11.0	3.0	2.0	1.0	---	---	---	15.0	---	---	27.0	20.0
27	10.0	3.0	2.0	2.0	3.0	---	---	14.0	29.0	23.0	---	20.0
28	10.0	4.0	---	1.0	---	---	10.0	15.0	29.0	26.0	---	---
29	---	3.0	1.0	1.0	---	5.0	9.0	15.0	24.0	---	27.0	19.0
30	10.0	---	---	1.0	---	6.0	10.0	16.0	23.0	---	27.0	19.0
31	---	---	1.0	1.0	---	---	---	---	---	26.0	27.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	56	263	27	356	95	1070	150	4050	295	2260	75	2750
2	56	243	24	257	67	798	300	7470	285	2020	90	3280
3	58	302	21	206	56	682	320	7110	285	1390	57	2080
4	50	400	50	450	75	946	263	4790	300	1070	44	1600
5	80	1220	50	370	100	1340	280	4080	350	1070	49	1790
6	78	1820	37	339	97	1570	361	4600	580	1640	192	7050
7	55	1230	63	667	81	1480	680	9290	430	1140	249	8810
8	74	1120	64	676	77	1400	1010	14100	280	742	103	3750
9	91	1400	37	347	68	1230	420	5010	200	530	54	1910
10	80	1330	40	332	46	850	280	3120	130	344	34	1400
11	78	1240	49	411	40	683	590	6830	60	159	22	832
12	70	1150	46	575	45	515	580	5730	65	172	28	1050
13	55	940	41	807	39	323	410	2830	100	267	50	1940
14	65	1110	98	2080	39	259	260	1560	220	707	47	1880
15	82	1300	52	1250	51	335	180	1040	227	938	34	1410
16	107	1500	63	1650	45	385	200	1250	60	306	32	1320
17	103	1440	34	906	35	416	280	1750	33	189	24	991
18	99	1240	30	662	41	503	380	2120	33	468	32	1320
19	86	926	28	538	51	622	240	1280	58	1270	32	1320
20	78	872	46	881	37	451	130	660	132	3380	32	1320
21	114	1600	52	956	30	365	350	1710	162	4590	43	1760
22	129	2070	70	1190	46	558	410	2010	52	1610	37	1440
23	120	1960	89	1460	44	518	310	1700	69	2420	27	860
24	118	1960	73	1150	39	429	170	1130	88	3210	38	1200
25	113	1830	60	912	40	442	105	748	84	3110	44	1580
26	116	1740	53	831	38	428	100	715	67	2500	44	1630
27	93	1250	75	1140	34	487	202	1260	59	2200	40	1540
28	99	1270	67	928	34	717	245	1090	62	2290	30	1100
29	100	1390	73	895	80	2180	190	657	---	---	24	791
30	38	541	82	901	192	5750	375	1290	---	---	30	875
31	26	359	---	---	174	4840	350	2540	---	---	26	814
TOTAL	---	37016	---	24123	---	32572	---	103520	---	41992	---	51393

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER						
1	13	442	12	541	33	1070	29	609	128	3770	38	97
2	25	783	17	762	54	1710	49	1070	125	3610	36	79
3	32	800	32	1370	48	1320	36	792	138	3800	34	74
4	38	669	18	603	41	996	40	717	182	3870	24	46
5	92	728	13	506	35	860	62	1000	146	3460	24	36
6	122	721	25	918	30	729	97	2530	140	3120	33	46
7	118	847	24	888	22	535	24	758	131	2740	65	91
8	103	1230	24	881	19	462	12	395	150	2980	40	57
9	81	1670	32	1170	16	372	9	296	140	2520	67	96
10	61	1680	72	2570	15	336	8	264	100	1540	60	86
11	37	1170	80	2680	14	310	20	659	74	895	58	84
12	23	814	32	1060	13	286	34	1120	57	396	50	73
13	47	1510	22	725	12	261	19	626	115	419	48	71
14	32	1050	19	621	40	918	18	593	120	499	44	57
15	15	498	19	616	103	2560	13	425	164	602	43	52
16	12	402	23	746	280	7560	10	324	140	325	46	64
17	24	810	42	1370	645	18300	7	223	102	196	71	109
18	28	953	47	1570	1210	35900	2	61	102	254	55	87
19	15	555	118	4010	735	21600	2	58	109	262	36	71
20	30	1290	74	2560	180	5690	15	413	136	276	38	128
21	118	5230	52	1800	80	2720	23	597	130	227	34	195
22	135	6010	55	1900	80	2700	22	558	108	167	35	387
23	70	3140	33	1140	50	1690	14	341	83	122	38	562
24	23	1030	16	553	60	1990	8	193	100	166	42	532
25	14	627	32	1100	60	1960	7	168	95	168	54	493
26	15	676	46	1540	59	1930	7	175	60	108	80	616
27	17	762	53	1770	60	1960	7	200	46	85	194	1260
28	19	857	54	1790	132	4450	50	1540	37	78	192	990
29	37	1680	41	1370	236	8030	68	2090	31	80	65	302
30	31	1400	20	670	54	1460	66	2030	22	88	100	378
31	---	---	12	392	---	---	94	2820	25	115	---	---
TOTAL	---	40034	---	40190	---	130655	---	23645	---	36928	---	7219
TOTAL LOAD FOR YEAR:		579287		TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)
JUN 02...	1250	14.0	12400	54	1810	42
JUL 12...	1155	25.0	12500	37	1250	86
AUG 23...	1120	25.0	738	92	183	88

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	NUMBER OF SAM- PLING POINTS (00063)	BED	BED	BED	BED
				MAT. SIEVE DIAM. X FINER THAN .062 MM (80164)	MAT. SIEVE DIAM. X FINER THAN .125 MM (80165)	MAT. SIEVE DIAM. X FINER THAN .250 MM (80166)	MAT. SIEVE DIAM. X FINER THAN .500 MM (80167)
JUN 02...	1300	12400	5	3	11	44	53
AUG 23...	1130	738	5	1	1	5	21

DATE	BED	BED	BED	BED	BED	BED
	MAT. SIEVE DIAM. X FINER THAN 1.00 MM (80168)	MAT. SIEVE DIAM. X FINER THAN 2.00 MM (80169)	MAT. SIEVE DIAM. X FINER THAN 4.00 MM (80170)	MAT. SIEVE DIAM. X FINER THAN 8.00 MM (80171)	MAT. SIEVE DIAM. X FINER THAN 16.0 MM (80172)	MAT. SIEVE DIAM. X FINER THAN 32.0 MM (80173)
JUN 02...	71	89	94	97	98	100
AUG 23...	42	59	70	85	100	--

DES MOINES RIVER BASIN

05481950 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'08", in SW1/4 SW1/4 sec.35, T.80 N., R.25 W., Polk County, Hydrologic Unit 07100004, on right bank 6 ft upstream from bridge on Northwest 70th Avenue, 0.5 mi downstream from Little Beaver Creek, 2.5 mi east of Grimes and 6 mi upstream from mouth.

DRAINAGE AREA.--358 mi².

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WDR IA-77-1: 1974 (P).

GAGE.--Water-stage recorder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft NGVD. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--23 years, 205 ft³/s, 7.78 in/yr, 148,500 acre-ft/yr; median of yearly mean discharges, 200 ft³/s, 7.6 in/yr, 145,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,340 ft³/s May 19, 1974, gage height, 14.69 ft; no flow for several days in 1970 and 1971 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 8	2030	2,590	10.98	May 20	1345	2,150	9.98
Mar. 29	1800	2,640	10.87	June 28	2215	2,880	11.86
Apr. 14	2230	2,320	10.30	June 29	1945	*3,130	*12.41
May 7	1330	1,550	8.79	July 2	0615	2,580	11.47

Minimum daily discharge, 13 ft³/s Sept. 13-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	75	141	620	335	423	2070	402	461	1570	123	69
2	18	100	139	518	145	410	2530	617	384	2000	103	58
3	20	75	134	447	97	427	2450	904	370	1510	89	42
4	20	68	128	413	145	410	1960	1130	355	1260	81	36
5	22	65	252	368	157	387	1100	971	335	789	71	27
6	24	62	808	216	153	676	1080	843	325	601	64	26
7	22	61	1180	218	149	1730	1060	1410	310	532	58	24
8	24	59	861	315	141	2310	1060	1190	291	482	53	24
9	29	57	620	394	132	1710	1060	935	272	455	46	22
10	42	57	511	460	123	865	1350	767	267	434	49	19
11	41	163	410	491	104	639	1530	681	256	416	46	17
12	38	748	260	447	97	545	1480	583	252	327	41	16
13	36	602	274	457	104	498	1840	554	241	341	40	13
14	35	380	417	319	210	488	2200	534	323	341	39	13
15	33	288	312	252	528	495	2200	501	1120	341	37	17
16	31	254	258	189	702	698	1820	472	984	341	30	22
17	29	226	237	244	1220	1120	1530	436	622	341	22	19
18	28	203	247	210	947	964	1240	459	521	341	20	16
19	28	192	236	200	772	741	1130	1450	501	279	19	36
20	32	183	216	187	584	646	1040	1920	483	189	17	70
21	50	165	204	172	471	570	879	1870	422	204	17	108
22	65	155	202	171	808	521	795	1560	380	163	22	143
23	68	147	207	163	1170	478	691	1380	335	141	21	100
24	62	137	278	153	788	595	621	1190	309	128	26	82
25	56	141	542	148	657	451	556	950	265	119	22	70
26	54	139	672	73	542	450	548	737	244	108	20	63
27	49	125	556	72	482	978	480	687	334	97	19	56
28	66	143	1000	109	461	2080	449	624	926	89	23	37
29	71	151	1540	236	---	2540	420	566	2330	163	30	37
30	71	143	1400	576	---	2470	398	531	2010	176	59	36
31	66	---	812	471	---	1950	---	498	---	168	57	---
TOTAL	1249	5364	15054	9309	12224	29265	37567	27342	16228	14446	1364	1318
MEAN	40.3	179	485	300	437	944	1252	882	541	466	44.0	43.9
MAX	71	748	1540	620	1220	2540	2530	1920	2330	2000	123	143
MIN	18	57	128	72	97	387	398	402	241	89	17	13
CFSM	.11	.50	1.36	.84	1.22	2.64	3.50	2.46	1.51	1.30	.12	.12
IN.	.13	.86	1.56	.97	1.27	3.04	3.90	2.84	1.69	1.50	.14	.14
AC-FT	2480	10640	29860	18460	24250	58050	74510	54230	32190	28650	2710	2610

CAL YR 1982 TOTAL 126353.3 MEAN 346 MAX 2740 MIN 1.1 CFSM .97 IN 13.13 AC-FT 250600
WTR YR 1983 TOTAL 170730.0 MEAN 468 MAX 2540 MIN 13 CFSM 1.31 IN 17.74 AC-FT 338600

DES MOINES RIVER BASIN

05482135 NORTH RACCOON RIVER NEAR NEWELL, IA

LOCATION.--Lat 42°36'15", long 95°02'42", in NE1/4 NW1/4 sec.24, T.90 N., R.36 W., Buena Vista County, Hydrologic Unit 07100006, on left bank 40 ft downstream from bridge on State Highway 7, 0.8 mi upstream from Outlet Creek, 2.2 mi west of Newell, and at mile 398.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--233 mi².

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Datum of gage is 1235.495 ft NGVD.

REMARKS.--Records good except those for October, November, January, and February, which are poor. Gage-height telemeter at station.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 2	Unknown	1,200	Unknown	Apr. 13	1130	1,380	14.72
Oct. 9	Unknown	1,300	Unknown	May 3	1315	1,080	13.95
Feb. 22	1630	811	14.51	June 14	2230	967	13.59
Mar. 7	0400	1,740	15.40	June 21	1230	*2,450	*16.30
Mar. 17	0400	947	13.52	June 30	1045	2,320	16.17
Apr. 2	0800	1,400	14.76				

Minimum daily discharge, 19 ft³/s Sept. 13,14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1000	195	192	351	86	1170	1340	311	220	2140	95	35
2	1200	184	200	228	75	1170	1380	810	210	2010	87	35
3	1200	170	205	196	61	1150	1340	1040	200	1700	81	33
4	1000	160	198	183	60	1140	1150	860	194	1350	73	32
5	880	152	190	165	59	1260	924	632	186	1100	68	33
6	756	150	165	164	58	1510	848	520	180	900	52	56
7	620	150	156	153	57	1700	875	550	174	760	57	49
8	850	140	152	149	58	1560	748	457	172	640	53	37
9	1270	152	150	157	60	1370	676	407	167	540	48	37
10	1100	340	148	179	62	1000	776	368	163	460	44	28
11	880	520	140	153	64	762	815	335	161	401	40	22
12	700	590	135	148	66	660	863	319	160	355	37	21
13	600	500	140	168	68	624	1340	303	172	319	36	19
14	520	420	145	163	76	580	1280	284	789	287	35	19
15	450	360	130	134	84	620	1140	267	870	260	32	23
16	390	320	125	120	94	816	1160	255	587	234	33	35
17	355	282	131	110	108	938	1080	247	441	210	31	35
18	330	255	135	106	140	870	912	293	688	209	29	60
19	320	285	124	104	202	780	870	533	1060	241	28	50
20	560	310	121	104	400	700	808	499	1110	202	27	243
21	560	280	119	104	560	600	710	424	2340	176	28	225
22	483	255	119	106	730	520	608	377	2170	159	40	157
23	415	230	119	105	820	475	527	331	1810	198	31	124
24	370	210	136	90	640	455	465	308	1400	186	28	111
25	335	200	538	78	480	445	426	282	995	163	29	95
26	300	190	585	66	485	430	389	262	788	144	28	86
27	280	180	416	75	797	350	345	250	3670	130	82	80
28	260	188	282	84	1210	417	322	252	1780	124	60	74
29	240	194	561	95	---	393	298	240	2080	118	42	75
30	220	188	634	89	---	332	282	224	2270	110	49	77
31	206	---	495	87	---	792	---	226	---	103	42	---
TOTAL	18650	7750	7087	4213	7659	25579	24697	12466	27207	15929	1455	2006
MEAN	602	258	229	136	274	825	823	402	907	514	46.9	66.9
MAX	1270	590	634	351	1210	1700	1380	1040	3670	2140	95	243
MIN	206	140	119	66	57	332	282	224	160	103	27	19
CFSM	2.58	1.11	.98	.58	1.17	3.54	3.53	1.72	3.89	2.20	.20	.29
IN.	2.97	1.24	1.13	.67	1.22	4.08	3.94	1.99	4.34	2.54	.23	.32
AC-FT	36990	15370	14060	8360	15190	50740	48990	24730	53970	31600	2890	3980

WTR YR 1983 TOTAL 154698 MEAN 424 MAX 3670 MIN 19 CFSM 1.82 IN 24.66 AC-FT 306800

DES MOINES RIVER BASIN

05482170 BIG CEDAR CREEK NEAR VARINA, IA

LOCATION.--Lat 42°41'16", long 94°47'52", in NE1/4 NE1/4 sec.24, T.91 N., R.34 W., Pocahontas County, Hydrologic Unit 07100006, on left bank 2 ft downstream from bridge on county highway N33, 2.0 mi downstream from Drainage ditch 21, 3.5 mi upstream from Drainage ditch 74, and 5.5 mi northeast of Varina.

DRAINAGE AREA.--80.0 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,225.12 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 39.8 ft³/s, 6.76 in/yr, 28,840 acre-ft/yr; median of yearly mean discharges, 34 ft³/s, 5.8 in/yr, 24,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft³/s Aug. 31, 1962, gage height, 13.68 ft; maximum gage height, 16.29 ft Mar. 24, 1979, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--1979 discharges above base of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	1730	551	8.15	Mar. 16	2300	404	6.72
Oct. 9	0745	533	7.97	Apr. 1	0200	603	7.91
Dec. 25	1400	449	7.02	Apr. 13	0515	678	8.29
Dec. 29	0300	468	7.14	Apr. 16	0100	523	7.47
Feb. 23	0015	535	7.54	May 3	0500	432	6.91
Feb. 27	2330	454	7.05	June 20	1700	*1,180	*11.03
Mar. 6	2015	937	9.53	June 30	0200	868	9.52

Minimum daily discharge, 1.9 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	509	65	55	82	19	372	554	105	62	688	21	3.3		
2	508	61	68	68	19	392	547	378	60	560	19	3.1		
3	435	56	70	64	18	386	468	390	57	418	18	3.1		
4	323	54	66	60	17	378	362	269	53	331	18	2.5		
5	250	51	65	53	17	425	304	202	51	263	16	2.7		
6	219	50	57	53	16	662	295	171	51	220	14	6.4		
7	185	49	57	47	15	730	312	152	48	187	12	3.5		
8	247	42	54	45	15	480	257	126	45	158	11	2.6		
9	501	54	57	47	16	358	243	119	42	130	10	3.1		
10	374	193	55	50	15	218	288	107	40	111	9.3	3.0		
11	280	211	49	37	15	211	304	98	39	98	8.4	2.7		
12	223	349	53	36	15	189	359	94	39	82	7.6	2.1		
13	187	206	50	42	15	183	605	88	43	70	7.3	1.9		
14	165	149	43	39	16	172	480	82	313	61	7.3	2.0		
15	147	120	39	35	17	232	424	76	224	55	6.3	3.8		
16	127	109	37	31	20	373	457	72	146	50	5.7	4.2		
17	118	96	39	28	25	364	350	70	116	45	5.3	4.2		
18	109	87	40	25	43	312	299	122	128	55	4.8	7.1		
19	123	100	36	26	68	267	268	223	159	63	5.1	14		
20	251	111	35	25	210	230	228	171	677	48	4.5	93		
21	211	95	35	24	285	183	199	142	827	42	6.2	49		
22	166	85	36	25	365	155	176	124	571	38	4.7	29		
23	139	73	35	24	450	142	157	106	408	42	4.2	21		
24	123	65	59	15	303	134	135	99	308	39	4.3	17		
25	112	62	348	14	195	129	123	87	235	36	4.1	15		
26	100	56	256	13	178	108	114	82	190	33	4.0	13		
27	94	53	171	15	312	68	98	81	317	31	12	12		
28	86	59	183	17	401	124	93	73	410	29	6.0	11		
29	79	53	396	23	---	123	84	68	526	28	4.5	21		
30	72	53	174	19	---	123	78	64	766	25	5.1	28		
31	68	---	93	19	---	363	---	66	---	23	4.1	---		
TOTAL	6531	2867	2811	1101	3100	8586	8661	4107	6951	4059	269.8	384.3		
MEAN	211	95.6	90.7	35.5	111	277	289	132	232	131	8.70	12.8		
MAX	509	349	396	82	450	730	605	390	827	688	21	93		
MIN	63	42	35	13	15	68	78	64	39	23	4.0	1.9		
CFSM	2.64	1.20	1.13	.44	1.39	3.46	3.61	1.65	2.90	1.64	.11	.16		
IN.	3.04	1.33	1.31	.51	1.44	3.99	4.03	1.91	3.23	1.89	.13	.18		
AC-FT	12950	5690	5580	2180	6150	17030	17180	8150	13790	8050	535	762		
CAL YR 1982	TOTAL	25200.45	MEAN	69.0	MAX	509	MIN	.32	CFSM	.86	IN	11.72	AC-FT	49990
WTR YR 1983	TOTAL	49428.10	MEAN	135	MAX	827	MIN	1.9	CFSM	1.69	IN	22.98	AC-FT	98040

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°20'28", long 94°59'05", in NE1/4 NW1/4 sec.24, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on right bank 15 ft downstream from bridge on county highway, 0.2 mi upstream from Indian Creek, 0.9 mi downstream from Drainage ditch 73, 5.6 mi south of Sac City, and at mile 365.9 upstream from mouth of Des Moines River.

DRAINAGE AREA.--713 mi².

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,144.60 ft NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for July 18 to Aug. 29 which are fair and those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 333 ft³/s, 6.34 in/yr, 241,300 acre-ft/yr; median of yearly mean discharges, 270 ft³/s, 5.1 in/yr, 196,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s Mar. 23, 1979, gage height, 18.02 ft; maximum gage height, 18.12 ft Sept. 1, 1962; no flow Jan. 30 to Feb. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft, from floodmark, discharge, 7,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 3	0915	3,360	12.25	Apr. 14	1400	4,370	13.54
Oct. 9	1500	3,840	12.95	May 3	1330	3,590	12.50
Feb. 23	Unknown	3,380	a12.22	June 15	0145	2,400	10.27
Mar. 7	1300	7,200	b15.16	June 21	0715	*9,390	c*17.31
Mar. 16	1715	3,250	c11.98	June 30	0830	7,230	16.31
Apr. 2	2215	4,510	13.72				

- a From floodmark.
- b From graph based on outside gage readings.
- c From outside gage.

Minimum daily discharge, 61 ft³/s Sept. 13,14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1920	638	560	978	298	3550	3960	997	663	6010	302	170		
2	2970	610	610	898	245	3950	4370	2430	638	5420	276	137		
3	3310	578	650	743	190	3450	4340	3480	619	4660	256	115		
4	3080	542	634	694	182	3310	3770	3160	593	4000	235	100		
5	2630	515	622	625	180	3800	3120	2480	569	3310	214	94		
6	2200	488	592	603	177	4500	2800	2010	548	2730	186	109		
7	1760	470	547	578	174	6730	2710	2120	528	2310	172	118		
8	1800	455	508	530	180	5720	2500	1870	515	2010	158	104		
9	3630	460	490	532	186	4520	2290	1560	503	1770	145	87		
10	3530	728	510	590	192	3690	2500	1370	490	1560	134	80		
11	3050	1450	490	540	194	2770	2680	1230	477	1390	124	72		
12	2490	1320	410	530	200	2270	2730	1140	470	1210	114	67		
13	2030	1240	430	600	204	2070	3840	1090	489	1070	103	61		
14	1720	1270	480	600	222	1930	4340	1010	1540	955	98	61		
15	1490	1170	455	520	255	2170	4040	938	2290	856	95	68		
16	1270	1040	420	500	300	3130	4000	875	1900	767	89	86		
17	1140	920	410	480	380	3180	3700	831	1490	692	85	90		
18	1040	852	440	380	470	2940	3220	895	2350	648	83	81		
19	991	852	415	380	770	2640	2970	1570	3700	690	79	111		
20	1490	954	388	385	1600	2340	2710	1760	4000	638	79	223		
21	1820	920	383	395	2350	2000	2430	1480	8720	548	88	574		
22	1590	830	394	405	2720	1690	2140	1300	6960	515	102	415		
23	1330	765	405	415	3340	1530	1880	1130	5470	612	103	299		
24	1160	672	453	360	3120	1450	1650	1010	4510	602	89	240		
25	1040	645	900	310	2230	1410	1470	931	3580	535	79	210		
26	935	618	1650	270	1810	1340	1340	851	2770	465	85	186		
27	867	568	1400	290	2440	1000	1200	823	3250	435	294	166		
28	827	588	1070	315	3450	1240	1100	790	4180	405	632	155		
29	771	592	752	345	---	1320	1020	779	5730	388	302	208		
30	712	558	1260	330	---	1260	948	735	6990	358	212	369		
31	662	---	1140	315	---	2210	---	696	---	330	216	---		
TOTAL	55255	23308	19868	15436	28059	84410	81768	43341	76532	47889	5230	4856		
MEAN	1782	777	641	498	1002	2723	2726	1398	2551	1545	169	162		
MAX	3630	1450	1650	978	3450	6730	4370	3480	8720	6010	632	574		
MIN	562	455	383	270	174	1000	948	696	470	330	79	61		
CFSM	2.50	1.09	.90	.70	1.41	3.82	3.82	1.96	3.58	2.17	.24	.23		
IN.	2.88	1.22	1.04	.81	1.46	4.40	4.27	2.26	3.99	2.50	.27	.25		
AC-FT	109600	46230	39410	30620	55660	157400	162200	85970	181800	94990	10370	96300		
CAL YR 1982	TOTAL	234328	MEAN	642	MAX	4200	MIN	11	CFSM	.90	IN	12.23	AC-FT	464800
WTR YR 1983	TOTAL	485952	MEAN	1331	MAX	8720	MIN	61	CFSM	1.87	IN	25.35	AC-FT	963900

DES MOINES RIVER BASIN

05482315 BLACKHAWK LAKE AT LAKE VIEW, IA

LOCATION.--Lat 42°18'15", long 95°02'30", in NW1/4 SE1/4 sec.33, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on south shore across from swimming beach at Lake View and 2 mi upstream from lake outlet.

DRAINAGE AREA.--23.3 mi².

PERIOD OF RECORD.--April 1970 to September 1975, April 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,218.50 ft NGVD and 2.00 ft below crest of spillway of dam at outlet. Prior to June 25, 1970, nonrecording gage at lake outlet.

REMARKS.--Lake is formed by concrete dam with ungated overflow spillway at elevation 1,220.50 ft NGVD. Lake is used for conservation and recreation. Area of lake is approximately 957 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 4.08 ft Mar. 20, 1979; minimum, 0.02 ft Sept. 26, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 3.19 ft June 22; minimum, 1.93 ft Sept. 12.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.25	2.27	2.41	2.58	2.51	2.94	2.79	2.64	2.45	3.06	2.30	2.09
2	2.28	2.27	2.41	2.56	2.56	2.95	2.86	2.70	2.45	3.11	2.29	2.08
3	2.29	2.23	2.39	2.55	2.55	2.94	2.97	2.81	2.42	3.03	2.27	2.05
4	2.28	2.21	2.40	2.54	2.53	2.93	2.96	2.86	2.41	2.93	2.26	2.03
5	2.29	2.21	2.39	2.53	2.52	2.94	2.94	2.87	2.40	2.86	2.25	2.04
6	2.26	2.22	2.39	2.53	2.51	3.02	2.89	2.87	2.39	2.83	2.23	2.07
7	2.25	2.22	2.40	2.52	2.49	3.11	2.85	2.87	2.38	2.76	2.22	2.06
8	2.34	2.24	2.39	2.52	2.48	3.11	2.84	2.90	2.37	2.71	2.21	2.05
9	2.38	2.26	2.38	2.51	2.47	3.03	2.85	2.90	2.35	2.65	2.19	2.03
10	2.35	2.26	2.37	2.55	2.46	2.96	2.85	2.84	2.35	2.61	2.16	2.01
11	2.34	2.32	2.37	2.55	2.46	2.89	2.86	2.79	2.36	2.55	2.14	1.99
12	2.34	2.27	2.37	2.54	2.45	2.84	2.90	2.76	2.37	2.52	2.13	1.96
13	2.33	2.35	2.36	2.53	2.45	2.77	2.92	2.72	2.38	2.49	2.10	1.95
14	2.33	2.36	2.36	2.53	---	2.74	2.97	2.67	2.48	2.45	2.10	1.96
15	2.31	2.39	2.36	2.53	---	2.77	3.00	2.64	2.50	2.43	2.09	1.98
16	2.32	2.40	2.37	2.52	---	2.80	2.98	2.61	2.53	2.40	2.07	1.98
17	2.32	2.40	2.38	2.51	2.45	2.83	2.97	2.62	2.54	2.38	2.05	1.99
18	2.30	2.41	2.38	2.51	2.46	2.84	2.94	2.66	2.65	2.39	2.04	1.97
19	2.28	2.45	2.39	2.50	2.48	2.82	2.90	2.64	2.68	2.39	2.01	1.98
20	2.28	2.42	2.39	2.49	2.60	2.80	2.84	2.64	2.84	2.36	2.02	1.99
21	2.30	2.44	2.40	2.48	2.78	2.76	2.79	2.63	3.10	2.34	2.08	1.98
22	2.30	2.42	2.40	2.48	2.90	2.73	2.77	2.60	3.17	2.34	2.08	1.97
23	2.30	2.40	2.40	2.48	2.98	2.70	2.75	2.59	3.11	2.36	2.06	1.98
24	2.29	2.40	2.44	2.48	2.99	2.68	2.73	2.56	3.04	2.34	2.07	1.98
25	2.29	2.40	2.51	2.48	2.94	2.70	2.70	2.54	2.93	2.33	2.07	1.97
26	2.30	2.39	2.52	2.48	2.90	2.77	2.66	2.54	2.82	2.32	2.06	1.98
27	2.30	2.38	2.55	2.47	2.89	2.75	2.64	2.50	2.81	2.33	2.07	1.98
28	2.28	2.40	2.56	2.46	2.92	2.70	2.61	2.50	2.85	2.32	2.05	1.97
29	2.27	2.40	2.63	2.51	---	2.67	2.59	2.48	2.90	2.34	2.05	2.03
30	2.27	2.40	2.60	2.50	---	2.67	2.57	2.46	2.95	2.33	2.10	2.03
31	2.27	---	2.58	2.50	---	2.69	---	2.45	---	2.31	2.10	---
MEAN	2.30	2.34	2.43	2.51	---	2.83	2.83	2.67	2.63	2.53	2.13	2.00
MAX	2.38	2.45	2.66	2.58	---	3.11	3.00	2.90	3.17	3.11	2.30	2.09
MIN	2.25	2.21	2.36	2.46	---	2.67	2.57	2.45	2.35	2.31	2.01	1.95

05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA

LOCATION.--Lat 41°59'17", long 94°22'36", in SW1/4 NW1/4 sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100006, on right bank 5 ft downstream from bridge on State Highway 4, 0.1 mi downstream from Drainage ditch 33 and 40, 1.9 mi south of Jefferson, 4.2 mi upstream from Hardin Creek, and at mile 292.5 upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,619 mi².

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as Raccoon River near Jefferson.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft NGVD. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--One discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 708 ft³/s, 5.94 in/yr, 512,900 acre-ft/yr; median of yearly mean discharges, 600 ft³/s, 5.0 in/yr, 435,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 29,100 ft³/s June 23, 1947, gage height, 22.3 ft; minimum daily, 0.6 ft³/s Oct. 5, 1956.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 11	2030	4,420	10.91	Apr. 16	1700	8,850	14.33
Feb. 24	1115	6,690	12.80	May 5	1200	7,210	13.16
Mar. 9	1700	11,600	15.92	June 24	0215	12,500	16.39
Mar. 18	1845	5,970	12.16	July 2	1500	*14,500	*17.38
Apr. 3	2215	8,530	14.11				

Minimum daily discharge, 211 ft³/s Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	401	1110	986	1990	500	5010	5320	2010	1580	12700	785	478		
2	992	1070	978	1840	401	5580	6980	2970	1550	14300	724	440		
3	2520	1030	1010	1560	395	5780	8220	4960	1490	13000	665	387		
4	3060	982	1070	1430	390	5740	8390	5460	1430	10900	623	343		
5	3250	948	1140	1340	380	5590	7850	7160	1370	9340	586	304		
6	2920	926	1190	1300	375	6060	6900	6320	1320	7730	573	293		
7	2460	908	1200	1200	370	7620	6010	4840	1260	6100	528	306		
8	2040	894	1130	1150	380	9830	5570	4480	1230	4770	490	306		
9	2000	885	1010	1050	395	11300	5220	3890	1200	3930	463	289		
10	3490	858	935	1100	410	10300	5190	3230	1250	3380	432	274		
11	4290	967	970	1180	425	8270	5310	2840	1150	2930	393	251		
12	4210	1890	918	1060	440	6060	5550	2570	1110	2510	364	237		
13	3410	3130	680	935	470	4290	6130	2440	1100	2230	353	225		
14	2690	3290	796	1050	530	3730	7310	2330	1370	2000	336	216		
15	2270	2500	902	1030	600	3560	8330	2190	2380	1790	321	211		
16	1990	2000	952	792	700	3880	8820	2050	3600	1600	304	214		
17	1760	1750	877	765	850	5010	8620	1940	3800	1380	290	226		
18	1600	1560	844	740	1050	5840	7900	1920	4100	1250	276	227		
19	1520	1440	804	730	2200	5710	7070	2060	4400	1220	260	242		
20	1550	1400	820	740	4880	4890	6210	3180	4700	1290	243	437		
21	1820	1450	796	790	5790	3990	5500	3290	4950	1070	269	440		
22	2280	1460	769	850	6160	3400	4820	2960	6330	1240	254	490		
23	2140	1340	777	952	6440	2970	4070	2620	10100	1140	252	606		
24	1900	1210	800	844	6570	2730	3460	2320	11900	1240	394	531		
25	1710	1120	897	700	6180	2610	3010	2100	9940	1210	302	443		
26	1570	1090	1980	580	4930	2570	2720	1940	7900	1120	276	390		
27	1450	1030	3110	640	3680	2290	2490	1870	6360	1030	260	356		
28	1380	1010	2840	720	4190	1880	2310	1790	6730	970	292	321		
29	1320	1030	1960	780	---	2300	2160	1720	8800	965	637	300		
30	1250	1030	1550	720	---	2580	2060	1650	10900	992	761	289		
31	1180	---	1920	650	---	3320	---	1600	---	877	586	---		
TOTAL	66423	41308	36611	31208	60081	154690	169500	93700	125300	116204	13292	10072		
MEAN	2143	1377	1181	1007	2146	4990	5650	3023	4177	3749	429	336		
MAX	4290	3290	3110	1990	6570	11300	8820	7160	11900	14300	785	606		
MIN	401	858	680	580	370	1880	2060	1600	1100	877	243	211		
CFSM	1.32	.85	.73	.62	1.33	3.08	3.49	1.87	2.58	2.32	.27	.21		
IN.	1.53	.95	.84	.72	1.38	3.55	3.89	2.15	2.88	2.67	.31	.23		
AC-FT	131700	81930	72620	61900	119200	306800	336200	185900	248500	230500	26360	19980		
CAL YR 1982	TOTAL	473943	MEAN	1298	MAX	6170	MIN	57	CFSM	.80	IN	10.89	AC-FT	940100
WTR YR 1983	TOTAL	918389	MEAN	2516	MAX	14300	MIN	211	CFSM	1.55	IN	21.10	AC-FT	1822000

DES MOINES RIVER BASIN

05483000 EAST FORK HARDIN CREEK NEAR CHURDAN, IA

LOCATION.--Lat 42°06'27", long 94°22'12", in SE1/4 SW1/4 sec.5, T.84 N., R.30 W., Greene County, Hydrologic Unit 07100006, on left bank 35 ft upstream from bridge on county highway E26, 1.6 mi upstream from small left-bank tributary, 4.4 mi upstream from mouth, and 6.5 mi southeast of Churdan.

DRAINAGE AREA.--24.0 mi².

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1954-55, 1957 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,050.90 ft NGVD.

REMARKS.--Records good. Small diversion for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--31 years, 10.1 ft³/s, 5.71 in/yr, 7,317 acre-ft/yr; median of yearly mean discharges, 7.7 ft³/s, 4.4 in/yr, 5,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 413 ft³/s May 5, 1960, gage height, 8.92 ft, from rating curve extended above 330 ft³/s; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
a	----	173	b5.59	June 29	1815	*237	*7.45
Mar. 6	1330	194	5.94				

a Sometime during period Feb. 19-21.
b From floodmark.

Minimum daily discharge, 0.02 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	2.1	5.3	25	8.5	37	101	25	21	150	1.5	.32
2	.37	1.8	6.7	22	10	37	88	38	20	107	.95	.19
3	.55	1.6	7.3	21	9.4	36	68	64	19	80	.79	.13
4	.56	1.6	7.3	20	8.5	35	52	51	18	61	.66	.08
5	.48	1.6	30	18	7.6	39	46	43	18	51	.47	.10
6	.46	1.5	68	18	6.9	142	57	40	17	44	.35	.10
7	.44	1.6	48	16	6.4	155	56	50	16	39	.30	.08
8	.62	1.4	36	16	6.4	104	46	47	16	33	.29	.08
9	2.4	1.4	26	17	5.0	64	58	43	14	27	.30	.06
10	2.9	1.5	21	19	4.4	45	78	38	14	22	.28	.06
11	1.8	13	17	16	3.9	35	64	35	13	18	.22	.06
12	1.5	27	16	17	3.7	32	98	34	13	16	.16	.04
13	1.2	16	16	17	6.4	32	103	31	12	15	.17	.02
14	1.1	12	14	15	15	35	99	30	80	14	.16	.04
15	1.0	9.9	11	13	48	43	91	29	46	14	.17	.10
16	.92	8.9	10	14	58	56	83	28	33	14	.14	.10
17	.84	7.9	12	12	78	49	61	27	28	13	.11	.10
18	.92	7.3	11	12	79	43	56	30	51	12	.07	.06
19	1.2	7.2	11	11	123	38	57	51	49	12	.07	5.3
20	10	7.2	9.1	10	140	33	48	45	38	10	.21	36
21	8.2	6.1	11	9.7	98	30	43	41	32	7.2	.35	11
22	6.0	6.7	12	9.7	90	28	39	38	27	5.7	.39	5.4
23	4.9	5.8	12	9.1	73	27	35	33	24	3.9	.34	3.2
24	4.0	6.7	22	7.9	56	26	31	32	22	3.8	.25	2.3
25	3.5	5.8	59	7.9	42	25	30	28	20	3.3	.26	1.6
26	3.0	5.3	31	7.3	37	24	28	27	18	2.6	.22	1.2
27	3.0	4.8	29	7.6	36	17	25	28	36	2.0	6.1	1.0
28	3.0	6.4	91	7.9	36	21	24	25	79	1.9	.56	.95
29	2.6	5.3	85	23	---	22	23	24	206	2.8	.28	.74
30	2.1	5.0	45	15	---	35	22	23	192	2.3	2.5	.95
31	2.0	---	29	9.4	---	108	---	22	---	1.9	.56	---
TOTAL	71.65	190.4	808.7	443.5	1096.1	1453	1709	1100	1192	789.4	19.18	71.36
MEAN	2.31	6.35	26.1	14.3	39.1	46.9	57.0	35.5	39.7	25.5	.62	2.38
MAX	10	27	91	25	140	155	103	64	206	150	6.1	36
MIN	.19	1.4	5.3	7.3	3.7	17	22	22	12	1.9	.07	.02
CFSM	.10	.27	1.09	.60	1.63	1.95	2.38	1.48	1.65	1.06	.03	.10
IN.	.11	.30	1.25	.69	1.70	2.25	2.65	1.70	1.85	1.22	.03	.11
AC-FT	142	378	1600	880	2170	2880	3390	2180	2360	1570	38	142

CAL YR 1982	TOTAL	6788.40	MEAN 18.6	MAX 188	MIN .07	CFSM .78	IN 10.52	AC-FT 13460
WTR YR 1983	TOTAL	8944.29	MEAN 24.6	MAX 206	MIN .02	CFSM 1.02	IN 13.86	AC-FT 17740

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA

LOCATION.--Lat 41°46'43", long 94°29'33", in SW1/4 SW1/4 sec.32, T.81 N., R.31 W., Guthrie County, Hydrologic Unit 07100007, on left bank 50 ft. downstream from bridge on State Highway 25, 0.2 mi downstream from Battle Run Creek, 1.8 mi upstream from Springbook Creek, 5.8 mi southeast of Bayard, 10.4 mi upstream from dam at Lake Panorama, and at mile 279.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--375 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1979 to current year. Occasional low-flow measurements, water years 1976,77. Contracted opening measurement of July 3, 1973 flood.

GAGE.--Water-stage recorder. Datum of gage is 1,040.00 ft. NGVD. Prior to June 23, 1979 nonrecording gage on downstream side of State Highway 25 bridge.

REMARKS.--Records good except those for winter period, which are poor. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,480 ft³/s Feb. 22, 1982, gage height, 18.71 ft, backwater from ice; minimum daily, 5.5 ft³/s, June 13,14, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 3, 1973 reached a stage of 21.63 ft, from contracted opening measurement, discharge, 14,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 20	0730	3,180	17.30	May 3	1730	2,140	15.44
Mar. 7	0830	2,390	15.79	June 30	1815	3,310	18.03
Apr. 1	0930	2,320	15.62	July 2	1515	*5,190	*19.79
Apr. 13	0800	1,770	14.25				

Minimum daily discharge, 41 ft³/s Sept. 12,13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	61	82	260	260	536	2120	680	328	2450	152	78
2	75	54	82	240	200	648	1630	1540	318	4150	142	62
3	88	55	84	220	150	627	1310	1890	318	2920	136	57
4	73	52	90	200	110	605	1020	1440	304	1760	129	54
5	59	51	120	180	97	599	856	1050	289	1280	123	52
6	55	55	170	180	94	1010	906	973	284	974	118	51
7	52	52	160	170	100	2090	1030	1080	284	798	113	51
8	50	51	130	170	100	1230	903	760	280	691	121	48
9	63	51	110	170	110	803	959	879	275	619	119	46
10	75	56	106	180	110	638	1340	557	275	561	109	43
11	60	133	105	180	110	561	1290	509	261	515	112	42
12	56	320	105	180	110	530	1270	495	275	462	100	41
13	54	257	105	170	110	518	1690	500	271	428	95	41
14	56	173	104	170	150	494	1600	475	339	399	97	42
15	56	159	104	160	350	548	1410	451	419	375	105	52
16	52	127	104	150	800	770	1420	417	382	354	83	55
17	50	115	103	140	1000	769	1160	400	668	334	74	51
18	51	101	102	140	1500	657	1010	423	633	313	70	46
19	59	100	101	130	2290	583	929	653	559	318	63	47
20	189	94	100	130	2810	534	842	554	515	291	59	222
21	162	90	98	120	1680	490	769	488	701	260	80	217
22	112	85	98	120	1300	461	712	477	895	239	91	107
23	95	80	97	120	1120	441	658	423	509	221	70	85
24	91	60	109	110	829	435	596	400	411	212	68	76
25	82	70	133	110	626	426	565	390	322	202	67	70
26	73	73	250	100	549	425	535	366	291	189	62	65
27	73	76	220	76	642	303	487	366	480	176	62	60
28	75	78	390	86	753	394	460	370	1150	178	52	57
29	76	79	300	180	---	496	446	356	2980	237	58	56
30	72	80	280	330	---	550	433	343	2980	185	68	56
31	68	---	270	360	---	1310	---	328	---	164	120	---
TOTAL	2296	2888	4412	5232	18060	20581	30357	20033	17996	22255	2928	2030
MEAN	74.1	95.3	142	169	645	654	1012	646	600	718	94.5	67.7
MAX	189	320	390	360	2810	2090	2120	1890	2980	4150	182	222
MIN	45	51	82	75	94	303	433	328	261	164	58	41
CFSM	.20	.26	.38	.45	1.72	1.77	2.70	1.72	1.60	1.92	.25	.18
IN.	.23	.29	.44	.52	1.79	2.04	3.01	1.99	1.79	2.21	.29	.20
AC-FT	4550	5730	8750	10380	35820	40820	60210	39740	35700	44140	5810	4030
CAL YR 1982 TOTAL		85291		MEAN 234	MAX 3030	MIN 17	CFSM .62	IN 8.46	AC-FT 169200			
WTR YR 1983 TOTAL		149068		MEAN 408	MAX 4150	MIN 41	CFSM 1.09	IN 14.79	AC-FT 295700			

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	11.0	---	---	.0	---	7.0	---	13.5	---	24.0	25.0
2	---	---	---	.0	---	---	---	9.0	---	---	---	---
3	---	13.0	---	---	---	---	---	---	---	---	24.0	---
4	17.0	---	---	---	---	5.0	---	14.0	---	---	---	25.0
5	---	11.0	---	---	---	---	---	---	---	22.0	25.0	---
6	17.0	---	5.0	.0	---	---	---	12.0	17.0	---	---	---
7	---	---	4.0	---	---	3.0	5.0	---	---	---	---	---
8	---	12.0	3.0	---	---	---	---	---	---	---	25.0	---
9	---	---	---	.0	.0	2.0	---	12.0	---	---	---	26.0
10	---	12.0	---	---	---	---	---	---	22.0	---	25.0	---
11	11.0	---	3.0	1.0	---	---	8.0	12.5	22.0	23.5	---	---
12	---	---	---	1.0	---	---	---	---	---	---	24.0	---
13	---	---	2.0	---	---	---	7.0	---	22.0	24.0	---	22.0
14	13.0	---	---	.5	1.0	7.0	---	---	---	26.0	---	---
15	13.0	10.0	2.0	1.0	1.0	---	8.0	---	---	---	25.0	---
16	---	---	.0	---	---	5.0	---	---	---	---	---	17.0
17	---	---	---	1.0	1.0	---	---	---	---	---	26.0	18.0
18	16.0	9.0	---	---	---	---	4.0	---	---	24.0	---	---
19	---	---	---	.0	---	---	---	12.0	23.0	23.0	26.0	---
20	12.0	9.0	3.0	---	---	---	5.0	---	19.0	24.0	---	---
21	---	---	---	1.0	1.0	---	6.0	---	---	---	---	16.0
22	---	6.0	---	---	---	2.0	7.0	---	24.0	25.0	24.5	16.0
23	---	---	---	---	---	---	---	14.0	---	---	---	15.0
24	---	---	---	---	---	---	---	---	---	---	---	---
25	18.0	---	---	1.0	---	5.0	---	15.0	---	25.0	---	15.0
26	---	---	.0	1.0	---	---	7.0	---	25.0	---	---	16.0
27	14.0	---	1.0	---	---	---	7.0	15.0	23.0	24.0	---	---
28	---	---	---	1.0	4.0	4.0	---	---	24.5	---	---	16.0
29	---	---	.0	---	---	---	---	13.0	23.0	25.0	---	---
30	---	---	---	---	---	6.0	---	---	23.0	---	26.0	17.0
31	---	---	---	---	---	---	---	---	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)										
1	78	9.6	88	14	27	6.0	410	288	78	55	665	1140
2	128	26	84	12	27	6.0	397	257	37	20	565	989
3	118	28	83	12	27	6.1	382	227	23	9.3	645	1090
4	83	16	86	12	25	6.1	380	205	24	7.1	1160	1890
5	80	13	86	12	142	46	348	169	45	12	990	1600
6	78	12	56	8.3	364	167	300	146	79	20	1060	2890
7	74	10	34	4.8	205	89	230	106	92	25	1600	9030
8	71	9.6	33	4.5	158	55	152	70	79	21	805	2670
9	83	14	44	6.1	157	47	92	42	55	16	560	1210
10	82	17	73	11	95	27	59	29	37	11	440	758
11	67	11	169	61	60	17	30	15	29	8.6	380	576
12	66	9.8	311	269	49	14	40	19	25	7.4	325	465
13	66	9.6	298	207	59	17	150	69	34	10	295	413
14	67	10	250	117	78	22	198	91	170	69	295	393
15	78	12	278	119	104	29	191	83	328	310	470	695
16	64	9.0	279	96	124	35	158	64	153	330	1020	2120
17	58	7.8	258	80	120	33	117	44	373	1010	525	1090
18	55	7.6	246	67	105	29	82	31	100	405	265	470
19	68	11	231	62	79	22	49	17	750	4640	278	438
20	250	128	215	55	73	20	33	12	2740	20800	280	404
21	230	101	192	47	64	17	34	11	1450	6580	285	377
22	168	51	162	37	55	15	30	9.7	650	2280	290	361
23	188	40	130	28	48	13	33	11	765	2310	300	357
24	148	36	96	16	51	15	32	9.5	782	1750	300	352
25	139	31	63	12	103	37	35	10	505	854	300	345
26	140	28	32	6.3	316	213	87	23	480	712	300	344
27	163	32	23	4.7	442	263	66	14	667	1160	290	237
28	137	28	24	5.1	530	558	68	16	990	2010	280	298
29	126	26	27	5.8	447	362	187	91	---	---	295	395
30	126	24	28	6.0	431	326	266	237	---	---	375	557
31	112	21	---	---	422	308	182	157	---	---	920	3250
TOTAL	---	788.9	---	1397.6	---	2820.2	---	2573.2	---	45442.4	---	37204

DES MOINES RIVER BASIN

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	APRIL	LOADS (T/DAY)	MAY	LOADS (T/DAY)	JUNE	LOADS (T/DAY)	JULY	LOADS (T/DAY)	AUGUST	LOADS (T/DAY)	SEPTEMBER
1	968	5540	574	1050	390	345	522	3450	218	89	195	41
2	320	1410	3390	14100	382	328	5150	62000	210	81	100	17
3	225	796	4060	20700	360	309	3190	27900	225	83	55	8.5
4	198	545	3190	12400	355	291	1080	5130	230	80	35	5.1
5	199	460	1060	3010	315	245	593	2050	259	86	35	4.9
6	280	685	540	1420	285	219	550	1450	279	89	55	7.6
7	400	1110	1040	3030	260	199	540	1160	280	85	70	9.6
8	280	683	460	944	235	178	528	985	320	105	95	12
9	258	668	320	759	245	182	518	866	358	115	135	17
10	480	1740	260	391	495	368	507	768	365	107	125	15
11	400	1390	250	344	410	289	490	681	220	67	95	11
12	445	1530	265	354	355	264	432	539	139	38	75	8.3
13	775	3540	255	344	395	289	392	453	160	41	45	5.0
14	505	2180	240	308	2510	2300	371	400	180	47	35	4.0
15	450	1710	215	262	3050	3450	359	353	180	51	30	4.2
16	425	1630	205	231	2180	2250	342	327	198	44	45	6.7
17	240	752	195	211	2030	3660	329	297	182	36	65	9.0
18	145	395	275	314	2540	4340	315	266	142	27	45	5.6
19	125	314	758	1340	2470	3730	327	281	110	19	55	7.0
20	360	818	420	628	1350	1880	525	491	110	18	778	722
21	225	457	195	257	1800	3410	560	393	118	25	990	580
22	200	384	120	155	1540	3720	400	258	250	61	375	108
23	205	364	100	114	1150	1580	452	270	300	57	140	32
24	215	346	175	189	688	763	406	232	255	47	140	29
25	225	343	260	274	365	317	360	195	165	30	155	29
26	230	333	255	252	320	251	300	153	135	23	170	30
27	215	283	260	257	911	1640	239	114	145	24	155	25
28	200	248	275	275	3280	23100	180	87	150	25	155	24
29	180	217	310	298	380	3060	810	518	175	27	95	14
30	160	187	345	320	718	5780	485	242	230	42	55	8.3
31	---	---	380	337	---	---	310	137	380	123	---	---
TOTAL	---	31068	---	64868	---	68738	---	112457	---	1792	---	1799.8
TOTAL LOAD FOR YEAR:		370949.1		TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
NOV 01...	1125	9.0	59	85	14	--	--
APR 20...	1425	5.0	798	427	920	--	--
JUN 01...	1045	14.0	307	385	319	--	--
JUN 28...	1625	26.0	3130	2980	25200	57	53
JUL 11...	1030	23.0	516	363	506	--	--
AUG 22...	1010	25.0	99	252	67	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 01...	--	--	--	--	--	--	87
APR 20...	--	--	--	--	--	--	79
JUN 01...	--	--	--	--	--	--	84
JUN 28...	66	74	93	94	97	100	--
JUL 11...	--	--	--	--	--	--	96
AUG 22...	--	--	--	--	--	--	98

DES MOINES RIVER BASIN

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	NUMBER OF SAM- PLING POINTS (00063)	BED MAT. SIEVE DIAM. X FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. X FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. X FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. X FINER THAN .500 MM (80167)
APR 20...	1500	798	5	--	0	6	50
JUN 01...	1045	307	5	5	7	17	61
JUL 11...	1010	516	5	1	3	17	55
AUG 22...	1030	99	5	1	1	10	43

DATE	BED MAT. SIEVE DIAM. X FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. X FINER THAN 2.00 MM (80159)	BED MAT. SIEVE DIAM. X FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. X FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. X FINER THAN 15.0 MM (80172)	BED MAT. SIEVE DIAM. X FINER THAN 32.0 MM (80173)
APR 20...	91	99	100	--	--	--
JUN 01...	87	96	97	98	100	--
JUL 11...	80	89	93	95	98	100
AUG 22...	79	93	98	100	--	--

DES MOINES RIVER BASIN

05483470 LAKE PANORAMA AT PANORA, IOWA

LOCATION.--Lat 41°41'44", Long 94°22'53", in SW1/4 NE1/4 sec.31, T.80 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, in gate control building of dam on Middle Raccoon River, 0.5 mi upstream from State Highway 44, 1.0 mi west of Panora, 4.4 mi upstream from Bay Branch, and at mile 268.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--433 mi².

PERIOD OF RECORD.--May 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft NGVD.

REMARKS.--Lake is formed by earthfill dam with 100 ft bascule gate and concrete chute spillway, and 300 ft earthen emergency spillway. Low-flow outlet is 30-inch conduit and gate valve through dam. Dam was completed in August 1970 and began filling April 27, 1971. Total storage, 60,000 acre-ft, surface area, 2,900 acres, at top of dam, elevation 1,068 ft. Storage unknown at top of spillway, elevation 1,048 ft. Normal storage, 19,700 acre-ft, surface area, 1,270 acres with bascule gate closed, elevation 1,045 ft. Dead storage unknown with bascule gate open, elevation 1,036 ft. Present lake classification is utility (industrial) but is also used for recreation. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 46.61 ft June 30, 1981; minimum, 44.05 ft Mar. 11, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 46.35 ft June 28; minimum, 44.05 ft Mar. 11.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.15	45.14	45.16	45.53	45.50	45.19	45.97	45.29	45.43	45.37	45.50	45.47
2	45.17	45.13	45.17	45.49	45.50	45.12	45.07	45.56	45.43	45.77	45.45	45.43
3	45.16	45.10	45.13	45.42	45.43	45.11	44.48	45.68	45.43	45.71	45.43	45.41
4	45.13	45.09	45.18	45.36	45.45	45.09	44.29	45.74	45.40	45.40	45.39	45.40
5	45.12	45.09	45.28	45.33	45.45	45.10	45.00	45.26	45.38	45.23	45.37	45.42
6	45.16	45.08	45.35	45.31	45.41	45.44	45.07	45.01	45.36	44.69	45.35	45.26
7	45.10	45.13	45.35	45.31	45.44	45.59	45.15	45.21	45.33	45.79	45.32	45.32
8	45.14	45.13	45.19	45.24	45.44	45.22	45.30	44.94	45.35	45.40	45.30	45.30
9	45.16	45.12	45.08	45.27	45.44	44.63	45.20	45.01	45.46	45.49	45.29	45.30
10	45.13	45.13	45.05	45.35	45.38	44.18	46.08	45.76	45.56	45.51	45.32	45.32
11	45.11	45.20	45.07	45.39	45.32	44.21	46.17	45.72	45.56	45.48	45.37	45.30
12	45.09	45.22	45.05	45.27	45.40	44.82	45.72	45.65	45.56	45.40	45.37	45.32
13	45.11	45.20	45.05	45.22	45.38	45.08	45.77	45.65	45.57	45.50	45.17	45.27
14	45.11	45.16	45.09	48.31	45.38	45.14	45.69	45.64	45.94	45.72	45.03	45.27
15	45.14	45.13	45.11	45.25	45.39	45.23	45.50	45.58	45.12	45.81	44.83	45.34
16	45.11	45.17	45.10	45.18	45.36	45.56	45.39	45.54	45.25	45.82	44.84	45.38
17	45.11	45.12	45.08	45.17	45.30	45.66	45.23	45.49	45.27	45.82	44.93	45.39
18	45.11	45.14	45.08	45.16	45.37	45.57	45.05	45.53	45.32	45.79	45.01	45.42
19	45.15	45.16	45.10	45.13	45.30	45.45	44.88	45.63	45.39	45.76	45.08	45.41
20	45.14	45.17	45.09	45.11	45.26	45.35	44.93	45.34	45.32	45.75	45.16	45.53
21	45.20	45.13	45.06	45.12	45.29	45.27	45.43	45.71	45.71	45.69	45.32	45.34
22	45.14	45.16	45.06	45.12	45.20	45.18	45.57	45.61	45.70	45.66	45.39	45.10
23	45.12	45.14	45.08	45.13	45.38	45.14	45.59	45.55	45.40	45.62	45.32	45.13
24	45.14	45.11	45.18	45.11	45.24	45.11	45.52	45.67	45.37	45.60	45.36	45.18
25	45.14	45.14	45.22	45.10	45.22	45.08	45.44	45.71	45.38	45.58	45.36	45.24
26	45.11	45.15	45.29	45.10	45.08	45.12	45.42	45.66	45.37	45.54	45.38	45.28
27	45.10	45.13	45.43	45.05	45.02	45.09	45.47	45.71	45.37	45.54	45.41	45.28
28	45.14	45.17	45.79	45.04	45.14	44.93	45.33	45.59	46.16	45.54	45.42	45.29
29	45.09	45.13	45.63	45.41	---	44.97	45.29	45.41	45.89	45.62	45.41	45.29
30	45.12	45.12	45.52	45.49	---	45.23	45.26	45.42	45.59	45.60	45.46	45.26
31	45.13	---	45.55	45.46	---	45.68	---	45.45	---	45.55	45.44	---
MEAN	45.13	45.14	45.21	45.26	45.34	45.15	45.34	45.51	45.48	45.57	45.28	45.32
MAX	45.20	45.22	45.79	45.53	45.50	45.68	46.17	45.76	46.16	45.82	45.50	45.53
MIN	45.09	45.08	45.05	45.04	45.02	44.18	44.29	44.94	45.12	44.69	44.83	45.10

WTR YR 1983 MEAN 45.31 MAX 46.17 MIN 44.18

DES MOINES RIVER BASIN

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05483600 MIDDLE RACCOON RIVER AT PANORA, IA

LOCATION.--Lat 41°41'14", long 94°22'15", in NE1/4 NW1/4 sec.5, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft downstream from bridge on county highway, 0.2 mi southwest of Panora, 1.5 mi upstream from Andy's Branch, 1.5 mi downstream from Lake Panorama, 18.2 mi upstream from mouth, and at mile 267.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1958 to current year.

REVISED RECORDS.--WDR IOWA 1974: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft NGVD.

REMARKS.--Records good. City of Panora diverts approximately 100 acre-ft/yr above station. Flow regulated by dam on Lake Panorama since August 1970.

AVERAGE DISCHARGE.--26 years, 211 ft³/s, 5.51 in/yr 152,900 acre-ft/yr; median of yearly mean discharges, 170 ft³/s, 5.2 in/yr, 123,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s May 19, 1974, gage height, 14.80 ft, from rating curve extended above 5,200 ft³/s by step-backwater analysis; no flow June 9, 10, 1977, result of gate operation at Lake Panorama; minimum daily discharge excluding regulation at Lake Panorama, 3.0 ft³/s July 9, 14, 22-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft, from floodmark, discharge, about 14,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 16	1645	2,620	7.69	Apr. 1	1745	3,340	8.29
Feb. 20	1600	2,920	7.94	June 28	1915	3,730	8.61
Mar. 7	1615	2,770	7.82	July 2	2045	*5,350	*9.81

Minimum daily discharge, 30 ft³/s Aug. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	75	70	306	338	667	2290	436	349	2420	174	76
2	81	74	150	281	256	618	2150	1320	343	3550	159	69
3	104	64	119	255	177	606	1570	1760	343	3500	150	62
4	98	44	84	224	129	591	858	1800	325	1570	143	59
5	55	43	437	211	110	599	752	1350	317	1780	134	58
6	78	44	266	204	105	889	984	1130	307	498	131	57
7	51	48	254	202	112	1870	1030	1300	294	724	124	46
8	53	66	150	196	121	1820	757	1080	232	620	118	43
9	99	66	127	196	123	1110	927	401	229	501	90	42
10	92	67	114	231	124	757	1230	484	271	512	70	43
11	72	247	117	247	123	271	1510	662	274	480	78	41
12	50	308	115	198	120	272	1540	610	271	403	121	44
13	63	308	117	177	123	397	1720	605	292	243	179	40
14	54	201	125	213	168	425	1750	567	1210	243	189	39
15	76	112	130	190	353	479	1570	543	525	281	106	48
16	47	160	124	164	1340	733	1470	510	344	292	31	53
17	41	139	119	165	1450	774	1330	478	356	285	30	54
18	41	110	116	159	1140	706	1160	602	386	274	31	54
19	90	117	121	150	1980	619	1030	1390	629	265	34	53
20	98	156	118	140	2750	558	611	457	502	262	33	179
21	219	99	112	141	2210	499	554	642	750	243	43	381
22	99	101	110	141	1320	449	661	562	975	225	53	135
23	81	91	114	139	968	420	656	463	565	209	62	41
24	83	50	154	138	993	400	599	449	418	202	63	46
25	84	48	167	135	768	388	550	484	389	199	65	52
26	79	121	187	128	608	415	529	447	371	188	66	60
27	61	62	285	115	548	405	491	719	373	184	70	61
28	113	137	469	85	623	321	487	547	2620	182	68	61
29	68	142	356	139	---	393	437	442	3190	217	67	60
30	59	117	301	389	---	519	415	338	3080	216	72	55
31	62	---	310	435	---	1230	---	355	---	195	72	---
TOTAL	2394	3417	5539	6094	19180	20200	31689	23053	20540	20964	2826	2113
MEAN	77.2	114	179	197	685	652	1053	744	685	675	91.2	70.4
MAX	219	308	469	435	2750	1870	2290	1800	3190	3550	189	381
MIN	41	43	70	85	105	271	416	338	229	182	30	39
CFSM	.18	.26	.41	.45	1.56	1.48	2.39	1.69	1.56	1.54	.21	.16
IN.	.20	.29	.47	.52	1.62	1.71	2.67	1.95	1.74	1.77	.24	.18
AC-FT	4750	6760	10990	12090	38040	40070	62660	45730	40740	41580	5610	4190
CAL YR 1982	TOTAL	88388	MEAN 242	MAX 3300	MIN 32	CFSM .55	IN 7.47	AC-FT 175300				
WTR YR 1983	TOTAL	157909	MEAN 433	MAX 3560	MIN 30	CFSM .98	IN 13.35	AC-FT 313200				

DES MOINES RIVER BASIN

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1979 to current year.

WATER TEMPERATURES: April 1979 to current year.

SUSPENDED SEDIMENT DISCHARGE: April 1979 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 29, 1979; minimum daily, 280 micromhos Feb. 25, 26, 1982.

WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1979; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,600 mg/L April 20, 1976; minimum daily mean, 4 mg/L Dec. 31, 1979, Jan. 1, 1980.

SEDIMENT LOADS: Maximum daily, 4,350 tons Mar. 23, 1982; minimum daily, 0.51 ton Jan. 16, 1981.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 710 micromhos Jan. 12, Apr. 26, May 25; minimum daily, 400 micromhos Jan. 21, Feb. 21.

WATER TEMPERATURES: Maximum daily, 29.0°C July 25; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 224 mg/L Feb. 21; minimum daily mean, 7 mg/L Jan. 4.

SEDIMENT LOADS: Maximum daily, 1,350 tons Feb. 21; minimum daily, 1.8 tons Sept. 3, 13.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983)
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	470	---	---	---	---	---	---	585	---	520	490
2	---	480	---	---	630	---	---	630	---	---	---	---
3	---	470	---	---	---	530	---	---	---	---	520	520
4	500	---	---	540	650	---	500	640	---	---	---	---
5	---	480	---	---	---	---	---	---	---	410	540	490
6	480	---	536	560	---	---	---	670	550	---	---	---
7	---	---	530	---	---	530	610	---	---	---	---	---
8	---	480	510	---	---	---	---	---	---	---	540	---
9	---	---	---	620	620	550	---	680	---	---	---	480
10	---	570	---	---	---	---	---	---	620	---	540	---
11	480	---	510	570	---	---	640	670	---	555	580	---
12	---	---	---	710	---	---	---	---	---	---	---	---
13	---	---	620	---	---	---	620	---	520	520	---	460
14	470	---	---	590	610	560	---	---	---	570	---	---
15	470	490	510	---	610	---	510	---	---	---	460	---
16	---	---	---	---	---	530	---	---	530	---	---	450
17	---	---	500	520	650	---	---	630	---	---	460	480
18	470	470	---	---	---	---	620	---	---	530	---	---
19	---	---	---	670	---	---	---	650	530	---	470	---
20	510	510	500	---	---	---	610	---	540	520	---	480
21	---	---	---	400	400	---	590	---	---	---	---	---
22	---	500	---	---	---	640	690	---	560	510	455	490
23	---	---	---	---	---	---	---	640	---	---	---	550
24	---	---	---	---	---	---	---	---	640	---	---	---
25	470	---	---	530	---	650	---	710	---	520	480	---
26	---	---	520	550	---	---	710	---	---	---	---	470
27	---	---	510	---	535	---	700	680	600	520	---	---
28	---	---	---	550	460	650	---	---	600	---	---	500
29	---	---	550	---	---	---	---	---	600	520	---	---
30	---	---	---	---	---	660	---	640	600	---	460	510
31	---	---	---	610	---	---	---	---	---	---	---	---

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.0	---	---	---	---	---	---	15.0	---	24.0	25.0
2	---	11.0	---	---	.0	---	11.0	7.0	---	---	---	---
3	---	13.0	---	---	---	---	---	---	---	---	24.0	18.0
4	---	---	---	.0	.0	---	6.0	15.0	---	---	---	---
5	---	11.0	---	---	---	---	---	---	---	23.0	24.0	26.0
6	18.0	---	5.0	.0	---	---	---	12.0	20.0	---	---	---
7	---	---	3.0	---	---	4.0	5.0	---	---	---	---	---
8	---	12.0	3.0	---	---	---	---	---	---	---	27.0	---
9	---	---	---	---	.0	3.0	---	15.0	---	---	---	26.0
10	---	11.0	---	---	---	---	---	---	22.0	---	28.0	---
11	12.0	---	3.0	.0	---	---	8.0	12.0	---	24.0	24.0	---
12	---	---	---	1.0	---	---	---	---	---	---	---	---
13	---	---	2.0	---	---	---	7.0	---	22.0	26.0	---	22.0
14	12.0	---	---	1.0	.0	7.0	---	---	---	24.0	---	---
15	13.0	9.0	3.0	---	1.0	---	8.0	---	---	---	24.0	---
16	---	---	---	.0	---	5.0	---	---	21.0	---	27.0	18.0
17	---	---	3.0	---	1.0	---	---	13.0	---	---	---	17.0
18	15.0	9.0	---	---	---	---	4.0	---	---	24.0	---	---
19	---	---	---	.0	---	---	---	12.0	23.0	---	---	---
20	11.0	8.0	3.0	---	---	---	5.0	---	21.0	27.0	---	17.0
21	---	---	---	---	2.0	---	6.0	---	---	---	---	---
22	---	7.0	---	---	---	2.0	7.0	---	26.0	25.0	---	16.0
23	---	---	---	---	---	---	---	14.0	---	---	---	15.0
24	---	---	---	---	---	---	---	---	27.0	---	---	---
25	---	---	---	1.0	---	4.0	---	15.0	---	29.0	---	---
26	---	---	1.0	.0	---	---	7.0	---	---	---	---	16.0
27	---	---	1.0	1.5	---	---	---	15.0	23.0	24.0	---	---
28	---	---	---	1.0	4.0	5.0	---	---	23.0	---	---	16.0
29	---	---	2.0	---	---	---	---	---	24.0	27.0	---	---
30	---	---	---	---	---	7.0	---	16.0	24.0	---	---	17.0
31	---	---	---	.0	---	---	---	---	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)										
1	30	4.3	24	4.9	53	10	11	9.1	31	28	81	146
2	36	7.9	29	5.8	64	26	10	7.6	32	22	78	130
3	40	11	28	4.8	56	18	9	6.2	32	15	73	119
4	34	9.0	20	2.4	44	10	7	4.2	28	9.8	62	99
5	41	6.1	22	2.6	70	83	9	5.1	27	8.0	64	104
6	55	12	24	2.9	37	27	14	7.7	25	7.1	88	211
7	53	7.3	23	3.0	23	16	16	8.7	20	6.0	130	656
8	51	7.3	36	6.4	25	10	16	8.5	18	5.9	126	619
9	64	17	40	7.1	19	6.5	18	9.5	20	6.6	110	330
10	46	11	66	12	17	5.2	22	14	20	6.7	102	208
11	26	5.1	107	71	17	5.4	30	20	19	6.3	83	61
12	24	3.2	102	85	13	4.0	19	6.9	18	5.8	59	43
13	24	3.4	83	69	13	4.1	13	5.3	18	6.0	35	38
14	28	4.1	60	33	13	4.4	11	8.1	18	8.2	23	26
15	44	9.0	40	12	23	8.1	11	5.6	22	21	27	35
16	34	4.3	28	12	22	7.4	11	4.9	67	242	70	139
17	28	3.1	19	7.1	13	4.2	12	5.3	42	164	68	142
18	31	3.4	14	4.2	14	4.4	15	6.4	30	92	62	118
19	48	12	16	5.1	15	4.9	23	9.3	89	476	54	90
20	38	10	54	23	19	6.1	24	9.1	286	2120	40	60
21	60	34	37	9.9	18	5.4	23	8.8	224	1350	28	38
22	37	9.9	34	9.3	19	5.6	22	8.4	145	517	18	22
23	32	7.0	33	8.1	21	6.5	21	7.9	112	293	16	18
24	28	6.3	32	4.3	21	8.7	19	7.1	107	287	15	16
25	26	5.9	36	4.7	20	9.0	17	6.2	102	212	13	14
26	33	7.0	62	20	17	8.6	14	4.8	91	149	12	13
27	49	8.1	45	7.5	17	13	20	6.2	88	130	12	13
28	57	17	64	24	14	18	14	3.2	87	146	20	17
29	46	8.4	61	23	14	13	38	14	---	---	20	21
30	38	6.1	53	17	14	11	49	51	---	---	28	39
31	28	4.7	---	---	12	10	30	35	---	---	102	339
TOTAL	---	264.9	---	501.1	---	373.5	---	314.1	---	6340.4	---	3924

DES MOINES RIVER BASIN
05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	168	1040	44	52	35	33	106	693	23	11	24	4.9
2	60	348	144	513	33	31	83	796	22	9.4	14	2.6
3	51	216	84	399	32	30	63	595	17	6.9	11	1.8
4	74	171	50	243	32	28	46	195	16	6.2	14	2.2
5	61	124	42	153	34	29	37	178	16	5.8	20	3.1
6	39	104	40	122	43	36	34	46	16	5.7	23	3.5
7	26	72	59	207	40	32	72	141	16	5.4	22	2.7
8	27	55	38	111	35	22	55	92	21	6.7	24	2.8
9	25	63	33	36	30	19	42	57	17	4.1	28	3.2
10	22	73	27	35	20	15	38	53	16	3.0	29	3.4
11	22	90	27	48	21	16	24	31	26	5.5	26	2.9
12	26	108	28	46	24	18	33	36	47	15	21	2.5
13	37	172	27	44	39	31	38	25	43	21	17	1.8
14	49	232	29	46	145	540	26	17	28	14	20	2.1
15	82	348	27	40	81	115	23	17	30	8.6	29	3.8
16	90	357	27	37	49	46	20	16	58	4.9	39	5.6
17	87	312	28	36	44	42	17	13	56	4.5	31	4.5
18	83	260	108	245	37	39	18	13	54	4.5	36	5.2
19	60	167	222	835	36	61	24	17	52	4.8	39	5.6
20	30	49	68	84	36	49	38	27	46	4.1	54	25
21	20	30	45	78	52	107	38	25	40	4.6	100	103
22	23	41	39	70	56	147	34	21	46	6.6	43	16
23	24	43	40	50	43	66	31	17	55	9.2	30	3.3
24	21	34	31	38	37	42	29	16	41	7.0	31	3.9
25	20	30	25	33	35	37	29	16	30	5.3	40	5.6
26	26	37	31	37	30	30	25	13	25	4.5	54	8.7
27	34	45	120	233	20	20	18	8.9	30	5.7	38	6.3
28	34	42	53	78	80	566	19	9.3	41	7.5	27	4.4
29	35	41	47	56	131	1130	30	18	39	7.1	24	3.9
30	30	34	45	41	130	1080	28	16	35	6.8	30	4.5
31	---	---	42	40	---	---	25	13	32	6.2	---	---
TOTAL	---	4738	---	4086	---	4457	---	3231.7	---	221.6	---	249.8
TOTAL LOAD FOR YEAR:		28701.6		TONS.								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 02...	1015	11.0	72	36	6.9	86
APR 20...	1055	5.0	947	27	69	97
JUN 01...	1445	14.0	338	91	83	65
JUL 11...	1330	25.0	457	23	28	93
AUG 22...	1315	25.0	52	39	5.5	93

DES MOINES RIVER BASIN
05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	NUMBER OF SAM- PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
NOV							
02...	1015	72	7	1	3	16	71
APR							
20...	1135	947	5	12	14	21	77
JUN							
01...	1445	338	5	4	5	10	28
JUL							
11...	1305	457	5	1	2	8	43
AUG							
22...	1330	52	5	1	1	5	26

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
NOV						
02...	93	98	99	99	100	--
APR						
20...	96	98	99	100	--	--
JUN						
01...	52	65	75	84	96	100
JUL						
11...	66	81	91	97	100	--
AUG						
22...	53	70	81	90	96	100

DES MOINES RIVER BASIN

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°34'48", long 94°10'58", in SW1/4 SW1/4 sec.3, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on left bank 35 ft (revised) downstream from bridge on county highway at Redfield, 0.8 mi downstream from bridge on U.S. Highway 6, 1.0 mi downstream from Middle Raccoon River, 16.4 mi upstream from mouth, and at mile 248.0 upstream from mouth of Des Moines River.

DRAINAGE AREA.--988 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940.

GAGE.--Water-stage recorder. Datum of gage is 896.43 ft NGVD. Prior to June 12, 1946, nonrecording gage, and June 12, 1946, to Sept. 30, 1966, water-stage recorder at site 20 ft upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 449 ft³/s, 6.17 in/yr, 325,300 acre-ft/yr; median of yearly mean discharges, 400 ft³/s, 5.5 in/yr, 290,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s July 2, 1958, gage height, 29.04 ft, from flood-mark; minimum daily, 17 ft³/s Aug. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	0415	6,130	11.34	May 19	0400	7,280	12.44
Feb. 20	0615	7,800	12.92	June 29	0100	*7,910	*13.02
Mar. 31	2030	5,740	10.96	July 3	0200	6,020	11.24

Minimum daily discharge, 92 ft³/s Aug. 19-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	151	197	257	859	450	1340	4830	966	810	4130	386	172
2	151	181	271	790	300	1300	4870	2280	780	4460	354	160
3	229	163	306	697	240	1290	3520	3400	754	5260	336	147
4	223	137	224	661	270	1220	2570	3070	717	2870	322	137
5	193	126	1540	631	310	1240	1460	2420	697	2420	306	130
6	158	123	1720	619	300	2520	2010	2110	692	1250	296	136
7	193	130	1030	689	315	3470	2020	2910	646	1000	283	129
8	188	137	700	615	330	3180	1990	2320	610	1400	261	118
9	372	148	493	610	305	2040	2030	1560	535	962	244	114
10	322	153	466	957	295	1520	2800	1010	560	957	180	108
11	272	1110	444	819	280	1110	3400	1380	550	951	174	107
12	215	1280	392	602	270	786	3600	1280	585	891	171	105
13	194	701	488	540	280	949	3800	1310	565	660	277	105
14	181	487	436	570	540	996	3900	1280	2560	550	298	103
15	174	388	395	510	1300	1060	3600	1180	1890	585	290	124
16	191	339	360	480	2120	2290	3300	1080	1150	600	134	154
17	156	365	345	520	3390	2080	3000	1030	1040	575	114	143
18	149	305	367	495	2480	1820	2100	1080	1020	555	98	135
19	150	302	387	520	4770	1640	2020	4540	1240	535	92	136
20	284	311	351	460	6220	1490	1660	2180	1180	525	92	256
21	363	282	328	430	4090	1390	1290	1550	1180	501	125	585
22	330	235	330	400	2900	1280	1390	1580	1450	486	159	420
23	245	232	376	360	2080	1170	1350	1250	1070	463	162	152
24	238	159	966	330	2000	1040	1260	1050	892	447	160	132
25	237	165	947	300	1580	987	1170	1100	764	440	157	135
26	232	212	719	270	1310	1020	1120	1020	675	422	157	140
27	222	212	1000	240	1210	995	1060	2330	1170	408	153	141
28	256	265	3640	260	1280	927	991	1340	3770	403	167	141
29	309	354	1440	830	---	1080	959	1160	5740	553	157	139
30	225	321	1030	840	---	1680	923	889	5220	523	179	137
31	199	---	934	600	---	4180	---	878	---	427	193	---
TOTAL	7002	9520	22682	17504	41215	49090	69993	52533	40512	36209	6477	4841
MEAN	225	317	732	565	1472	1584	2333	1695	1350	1168	209	161
MAX	372	1280	3640	957	6220	4180	4870	4540	5740	5260	386	585
MIN	149	123	224	240	240	786	923	878	535	403	92	103
CFSM	.23	.32	.74	.57	1.49	1.60	2.36	1.72	1.37	1.18	.21	.16
IN.	.26	.36	.85	.66	1.55	1.85	2.64	1.98	1.53	1.36	.24	.18
AC-FT	13890	18880	44990	34720	81750	97370	138800	104200	80360	71820	12850	9600

CAL YR 1982	TOTAL	214796	MEAN 588	MAX 4610	MIN 51	CFSM .60	IN 8.09	AC-FT 426000
WTR YR 1983	TOTAL	357578	MEAN 980	MAX 6220	MIN 92	CFSM .99	IN 13.46	AC-FT 709300

05484500 RACCOON RIVER AT VAN METER, IA

LOCATION.--Lat 41°32'02", long 93°56'59", in SW1/4 SW1/4 sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100007, on right bank 10 ft downstream from bridge on county highway R16, 0.3 mi northeast of Van Meter, 0.7 mi upstream from small left bank tributary, 1.1 mi downstream from confluence of North and South Raccoon Rivers, 29.0 mi upstream from mouth, and at mile 230.5 upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,441 mi².

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1927 (M). WSP 1438: Drainage area. WSP 1508: 1915 (M), 1916-17, 1918-23 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 841.16 ft NGVD. See WSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Records fair except those for winter period which are poor. Corps of Engineers rain-gage and gage-height telemeters at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--68 years, 1,346 ft³/s, 6.31 in/yr, 975,200 acre-ft/yr; median of yearly mean discharges, 1,150 ft³/s, 4.6 in/yr, 833,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,200 ft³/s June 13, 1947, gage height, 21.37 ft, from flood-mark; maximum gage height, 21.77 ft July 3, 1958; minimum daily discharge, 10 ft/s Jan. 22-31, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	0730	12,200	12.78	Apr. 17	1715	14,500	14.08
Feb. 20	1246	13,700	13.66	May 7	0130	13,700	13.64
Mar. 11	0215	14,900	14.28	May 19	0830	10,200	11.61
Mar. 16	1915	8,520	10.53	June 26	1030	12,100	12.70
Apr. 2	1615	14,400	14.00	June 30	1300	19,400	16.25
Apr. 10	0215	12,000	12.73	July 3	1930	*25,500	*18.59

Minimum daily discharge, 339 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	584	1690	1910	4480	2200	6860	12100	4260	3470	18600	1690	913		
2	570	1620	1810	4280	1600	7320	13800	5410	3350	19600	1520	815		
3	762	1430	1830	3890	1200	7830	13500	7990	3330	24400	1470	561		
4	2440	1360	1800	3580	1110	8080	13200	9390	3240	23300	1380	636		
5	3130	1290	2690	3370	1050	8300	12400	9750	3260	18700	1320	568		
6	3330	1240	2890	3190	1000	10600	13000	10300	3060	15600	1240	509		
7	3110	1190	4360	3060	1060	12200	12300	12600	2880	11100	1150	464		
8	2730	1200	3820	2930	1120	13200	10900	10400	2710	9810	1110	426		
9	2720	1210	3120	2880	1100	13600	10600	8370	2510	7210	1040	438		
10	2580	1200	2820	3140	1020	14600	11700	6760	2530	6030	942	438		
11	3910	2440	2490	3310	1100	14600	11400	6230	2610	6340	904	399		
12	4560	4280	1890	2870	1200	12000	12700	5660	2590	4940	778	381		
13	4480	3620	1850	2700	1320	9720	13500	5320	2670	4240	868	351		
14	3790	4600	1860	2600	2180	7260	13900	5130	5320	3840	875	339		
15	3070	4420	2060	2480	3960	6250	14000	4860	5540	3620	846	393		
16	2630	3540	2130	2100	4050	7500	14100	4490	5020	3520	763	393		
17	2300	3120	2120	1820	6690	8210	14400	4290	5570	3230	656	375		
18	2050	2760	2090	1700	6110	8370	14000	4330	5200	2850	581	381		
19	1870	2540	2150	1600	9060	8680	12900	8390	5190	2740	561	393		
20	1900	2400	2130	1550	12900	8690	11500	7360	5620	2620	516	490		
21	2020	2340	2020	1520	12300	7920	9930	6300	6010	2480	496	830		
22	2480	2300	1940	1600	11400	6650	8960	6620	6980	2380	561	438		
23	2800	2280	1970	1690	10800	5810	7880	6810	7380	2170	529	845		
24	2610	2100	3040	1710	10400	5290	6840	5150	8040	2460	555	868		
25	2340	1900	3420	1600	9780	4970	6010	4860	9980	2080	516	800		
26	2110	1890	3490	1490	9050	4910	5470	4460	11800	2000	477	712		
27	1920	1870	4590	1400	7880	4740	5040	5070	11000	1920	522	719		
28	1890	1960	10400	1310	6450	4120	4640	4410	11500	1820	503	594		
29	1930	2010	7020	1800	---	4180	4310	4080	15700	2130	509	561		
30	1720	1950	5420	3500	---	6440	4110	3690	18800	1980	581	503		
31	1600	---	4520	3000	---	9900	---	3640	---	1860	973	---		
TOTAL	75936	67540	96650	78140	139090	257800	318990	195380	182760	214560	26431	16531		
MEAN	2450	2251	3085	2521	4968	8316	10630	6303	6092	6921	853	551		
MAX	4560	4500	10400	4480	12900	14600	14400	12600	18800	24400	1690	913		
MIN	570	1190	1800	1310	1000	4120	4110	3640	2510	1820	477	339		
CFSM	.71	.65	.90	.73	1.44	2.42	3.09	1.83	1.77	2.01	.25	.16		
IN.	.82	.73	1.03	.84	1.50	2.79	3.45	2.11	1.98	2.32	.29	.18		
AC-FT	150600	134000	189700	165000	275900	511300	632700	387500	362500	425600	52430	32790		
CAL YR 1982	TOTAL	1003058	MEAN	2748	MAX	11300	MIN	166	CFSM	.80	IN	10.84	AC-FT	1990000
WTR YR 1983	TOTAL	1668808	MEAN	4572	MAX	24400	MIN	339	CFSM	1.33	IN	18.04	AC-FT	3310000

DES MOINES RIVER BASIN

05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in SW1/4 SE1/4 sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft downstream from bridge on 63rd Street in Des Moines, and 2.2 mi upstream from Raccoon River.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR Iowa 1973: 1972. WDR IA-75-1: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 801.04 ft NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 63.1 ft³/s, 10.6 in/yr, 45,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft³/s July 1, 1973, gage height, 17.72 ft; no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 27	2330	757	8.84	June 29	1700	1,490	11.60
Apr. 12	1216	728	8.67	July 2	0500	771	9.00
May 7	0400	899	9.21	July 3	2045	*1,840	*12.64
May 19	0230	740	8.56	Aug. 30	0900	609	8.30
June 9	2000	618	8.01				

Minimum daily discharge, 0.60 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	232	52	112	38	68	430	117	92	155	12	4.1
2	13	106	52	96	36	64	498	144	89	376	14	3.3
3	13	80	52	86	34	61	398	230	87	351	12	2.5
4	14	68	51	83	34	57	269	199	81	318	12	3.0
5	29	62	270	76	36	64	236	160	81	101	12	3.0
6	29	57	302	77	39	378	248	181	75	76	12	3.7
7	22	59	199	74	42	324	210	515	71	63	11	2.5
8	44	61	148	67	44	204	183	259	68	55	11	2.2
9	36	72	120	68	46	144	265	203	133	49	10	1.4
10	24	58	105	74	48	118	338	167	69	43	10	2.3
11	21	323	90	68	50	104	248	144	62	38	9.1	1.6
12	20	314	84	64	54	99	452	139	62	32	8.6	.80
13	19	182	80	60	60	101	421	128	61	29	7.8	.60
14	19	133	76	56	77	92	429	127	188	25	6.5	1.3
15	19	103	70	49	120	102	297	111	118	22	6.0	39
16	21	89	66	47	150	87	240	102	92	21	4.9	7.4
17	25	77	64	49	190	83	227	101	91	19	4.5	4.8
18	29	69	62	52	228	80	211	157	124	15	3.7	3.3
19	35	67	60	52	352	75	212	485	90	18	3.0	76
20	49	65	57	48	272	82	186	252	73	24	2.5	29
21	37	57	56	44	199	75	168	205	66	22	9.6	14
22	35	53	55	41	156	72	155	327	60	20	18	14
23	42	49	56	39	131	73	142	208	55	20	6.5	11
24	46	43	115	37	111	76	129	202	52	19	21	9.1
25	50	44	106	36	92	75	124	175	48	19	7.8	7.1
26	54	43	83	34	82	95	119	148	47	19	6.5	6.0
27	56	39	178	35	77	90	104	146	96	18	36	4.1
28	140	102	451	40	72	106	99	133	224	16	4.9	3.7
29	82	64	229	48	---	124	93	119	842	30	4.1	3.3
30	61	54	164	43	---	207	88	106	282	14	95	2.5
31	63	---	133	40	---	475	---	106	---	14	8.6	---
TOTAL	1157	2825	3686	1795	2872	3855	7220	5797	3579	2041	390.6	265.60
MEAN	37.3	94.2	119	57.9	103	124	241	187	119	65.8	12.6	8.89
MAX	140	323	451	112	352	475	498	515	842	376	95	76
MIN	10	39	51	34	34	57	88	101	47	14	2.5	.60
CFSM	.48	1.20	1.52	.74	1.31	1.58	3.07	2.39	1.52	.84	.16	.11
IN.	.55	1.34	1.75	.85	1.36	1.83	3.43	2.75	1.70	.97	.19	.13
AC-FT	2290	5600	7310	3560	5700	7650	14320	11500	7100	4050	775	529

CAL YR 1982 TOTAL 33218.80 MEAN 91.0 MAX 686 MIN 3.3 CFSM 1.16 IN 15.76 AC-FT 65690
WTR YR 1983 TOTAL 35484.20 MEAN 97.2 MAX 842 MIN .60 CFSM 1.24 IN 16.84 AC-FT 70380

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'30", long 93°35'48", in NE1/4 SE1/4 sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on right bank 10 ft downstream from bridge on Southeast 14th Street at Des Moines, 0.8 mi downstream from Raccoon River and Scott Street Dam, and at mile 200.7.

DRAINAGE AREA.--9,879 mi².

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage recorder. Datum of gage is 752.52 ft NGVD. Prior to Oct. 1, 1951, and Oct. 1, 1953, to Sept. 30, 1959, water-stage recorder above Scott Street Dam, 0.8 mi upstream at datum 11.16 ft higher. Oct. 1, 1951, to Sept. 30, 1953, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi above station. Average daily pumpage was about 58 ft³/s. At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir, capacity, 4,800 acre-ft. Effluent from sewage treatment plant enters the river 2.3 mi below station. Net effect of diversions not known. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (station 05481630) 13.0 mi upstream, since Apr. 12, 1977. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers. Average monthly pumpage from galleries furnished by Des Moines Water Works.

AVERAGE DISCHARGE.--43 years, 4,274 ft³/s, 5.88 in/yr, 3,097,000 acre-ft/yr; median of yearly mean discharges, 3,580 ft³/s, 4.9 in/yr, 2,590,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,000 ft³/s June 26, 1947, gage height, 20.8 ft in gage well, 21.6 ft from outside floodmark, site and datum then in use; minimum daily, 26 ft³/s Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903, reached a stage of 20.9 ft, from flood profile, at Scott Street site and datum, by office of Des Moines City Engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,800 ft³/s July 4, gage height, 25.70 ft; minimum daily, 1,190 ft³/s Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2670	7020	6210	15300	5940	21500	24200	22200	17200	28500	13700	2430		
2	2590	5970	6400	14600	5210	21900	29100	22900	17300	31100	13300	2130		
3	2670	5230	6400	12700	3950	22400	26600	24800	16700	32400	12700	2030		
4	4250	5090	6570	10900	3020	22700	21300	26000	14300	36600	11600	1870		
5	7470	4300	7500	9030	2910	23000	18000	26400	13900	30800	10700	1570		
6	11200	4580	12400	7890	2780	25200	16600	25600	13600	30700	9990	1460		
7	11700	5180	12100	8150	2570	28600	16600	28200	13200	28500	9260	1400		
8	8810	5120	11300	8310	2660	30100	17200	27500	13000	26300	8570	1410		
9	7960	4870	10400	7420	2750	27600	19000	24800	12900	24000	7970	1430		
10	8420	4390	9920	7160	2720	30100	23900	22900	12000	21800	6600	1440		
11	8700	5270	9500	7640	2710	29800	25200	20600	11700	20600	5910	1440		
12	9800	9320	6720	6740	2710	27900	28400	19800	11100	19900	4110	1400		
13	10400	11100	5330	5480	2780	25900	29500	19300	11100	19200	2600	1380		
14	10000	11900	4900	5020	3420	23600	29200	19000	13000	18500	2770	1230		
15	9030	13400	4910	4720	5480	22500	29900	18800	16200	17900	2880	1280		
16	7640	13600	5470	4660	6170	22600	30000	18300	16400	17500	2440	1190		
17	7330	13400	6680	4360	9280	24500	30300	18000	17200	17100	1840	1260		
18	6800	11600	6910	3910	11800	24700	30300	18300	18200	16400	1770	1240		
19	5800	9770	6880	3700	16700	24900	29900	21700	17600	15200	2010	1560		
20	5720	9590	6860	3500	22200	24800	30900	23900	18000	14700	1770	2500		
21	6560	9260	6850	3450	24900	24200	30400	21900	19700	13600	1630	2860		
22	7790	8670	6730	3600	24700	23100	29100	22400	20500	13200	1540	5070		
23	8360	8310	6690	4100	25900	20200	27600	21300	21100	12400	1510	6610		
24	8550	8010	6790	4400	26200	18000	26600	19900	21500	12100	1630	5940		
25	8200	7520	7990	4320	25500	19700	25600	19600	22500	11800	1600	4810		
26	7580	7600	8400	4490	24800	19900	24700	18800	25200	12000	1620	4150		
27	6820	7600	9500	4090	23900	20600	24000	18800	26400	13400	1820	3780		
28	6710	7200	20000	3620	22000	19800	23500	19500	27200	14200	1660	3220		
29	6980	6730	19000	3690	---	19100	22800	18100	32700	14600	1840	2900		
30	7080	6200	18800	6090	---	19300	22300	17700	31600	14700	2760	2230		
31	6710	---	16300	6560	---	21200	---	17300	---	14200	3180	---		
TOTAL	230300	237800	280410	199600	315660	729400	762700	664300	543000	613900	153280	73220		
MEAN	7429	7927	9045	6439	11270	23530	25420	21430	18100	19800	4945	2441		
MAX	11700	13600	20000	15300	26200	30100	30900	28200	32700	36600	13700	6610		
MIN	2590	4300	4900	3450	2570	18000	16600	17300	11100	11800	1610	1190		
AC-FT	456800	471700	556200	395900	626100	1447000	1513000	1318000	1077000	1218000	304000	145200		
CAL YR 1982	TOTAL	2739450	MEAN	7505	MAX	23900	MIN	390	CFSM	.76	IN	10.32	AC-FT	5434000
WTR YR 1983	TOTAL	4803570	MEAN	13160	MAX	36600	MIN	1190	CFSM	1.33	IN	18.09	AC-FT	9528000

DES MOINES RIVER BASIN

05485640 FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'50", long 93°32'43", in NE1/4 NE1/4 sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100008, on right bank 20 ft downstream from bridge on Easton Blvd., 4.4 mi downstream from Muchikinock Creek and 5.0 mi upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi².

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 795.87 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 71.3 ft³/s, 10.4 in/yr, 51,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,340 ft³/s June 9, 1974, gage height, 14.84 ft; no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 11	2045	517	7.18	June 26	2315	701	7.70
Dec. 28	0345	622	7.36	June 28	2345	3,650	13.55
Feb. 19	0200	677	7.57	June 29	0130	*4,080	*13.92
Apr. 2	1700	821	7.83	July 2	1815	1,340	9.87
Apr. 13	0015	818	7.95	July 4	0145	3,620	13.52
May 7	1045	552	7.02	Sept.20	0230	574	6.92

Minimum daily discharge, 3.1 ft³/s Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	99	55	125	33	108	632	103	98	431	35	50
2	6.0	64	55	105	32	107	747	149	93	905	30	34
3	6.1	40	52	94	29	102	601	271	89	1030	27	23
4	5.6	32	49	88	30	96	407	267	84	1610	25	17
5	7.1	27	223	80	32	100	333	195	82	408	22	15
6	6.7	25	349	77	35	261	350	167	79	287	20	15
7	5.5	23	209	73	38	386	296	410	74	227	18	13
8	10	21	154	68	39	251	248	302	71	189	16	11
9	19	23	130	70	41	179	297	231	71	159	14	8.8
10	9.7	21	115	74	42	147	436	189	67	135	13	8.2
11	8.1	227	100	68	43	127	350	163	64	117	11	7.5
12	7.3	356	94	66	46	120	491	152	64	102	9.8	7.1
13	6.8	178	85	64	50	120	650	137	61	91	8.9	6.5
14	6.6	131	76	60	58	114	709	131	114	83	8.0	6.3
15	6.2	110	71	55	100	126	497	118	98	76	6.3	16
16	5.7	98	63	56	170	120	363	110	85	69	5.6	12
17	5.8	85	61	58	220	117	296	106	79	62	4.7	9.7
18	5.8	77	58	60	280	116	258	140	215	58	3.9	8.8
19	6.0	75	57	62	523	109	248	402	224	55	3.1	89
20	9.9	72	57	58	450	107	214	310	159	49	3.5	388
21	7.4	61	55	54	315	101	192	244	128	44	4.1	198
22	6.7	58	56	50	248	96	172	266	108	40	15	121
23	6.7	54	56	45	202	94	155	208	95	37	11	85
24	6.6	50	89	40	170	97	140	177	87	35	16	65
25	6.5	50	110	39	140	97	134	163	80	35	10	54
26	6.3	46	91	37	122	104	127	143	101	31	23	44
27	6.3	43	118	34	111	88	113	134	761	28	37	37
28	35	64	492	35	107	112	107	130	1510	26	26	30
29	42	57	299	39	---	130	101	120	2160	59	19	25
30	26	54	203	37	---	217	95	112	760	58	170	22
31	22	---	157	35	---	572	---	109	---	42	112	---
TOTAL	321.3	2321	3839	1906	3706	4621	9759	5859	7761	6578	727.9	1426.9
MEAN	10.4	77.4	124	61.5	132	149	325	189	259	212	23.5	47.6
MAX	42	356	492	125	523	572	747	410	2160	1610	170	388
MIN	5.5	21	49	34	29	88	95	103	61	26	3.1	6.3
CFSM	.11	.84	1.34	.66	1.42	1.61	3.51	2.04	2.79	2.29	.25	.51
IN.	.13	.93	1.54	.76	1.49	1.85	3.92	2.35	3.11	2.64	.29	.57
AC-FT	637	4600	7610	3780	7350	9170	19360	11620	15390	13050	1440	2830

CAL YR 1982	TOTAL	36754.5	MEAN	101	MAX	2260	MIN	2.7	CFSM	1.09	IN	14.75	AC-FT	72900
WTR YR 1983	TOTAL	48826.1	MEAN	134	MAX	2160	MIN	3.1	CFSM	1.45	IN	19.59	AC-FT	96850

05485000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'25", Long 93°39'10", in NW1/4 SW1/4 sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft downstream from bridge on county highway R57, 1.7 mi southeast of Norwalk, 5.2 mi upstream from Middle Creek, and 5.2 mi downstream from Badger Creek.

DRAINAGE AREA.--349 mi².

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1945. WDR IA-75-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft NGVD (levels by Corps of Engineers). Prior to June 12, 1945, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1950, nonrecording gage at site 2.1 mi upstream at different datum.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--One discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 182 ft³/s, 7.08 in/yr, 131,900 acre-ft/yr; median of yearly mean discharges, 170 ft³/s, 6.6 in/yr, 123,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s June 13, 1947, gage height, 25.3 ft, from floodmark, from rating curve extended above 9,100 ft³/s on basis of velocity-area studies; no flow at times during period 1954-58.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 30	----	2,220	20.50	Apr. 4	0300	*4,290	*21.90
Feb. 15	1115	1,760	19.17	Apr. 14	----	2,860	20.44

Minimum daily discharge, 3.6 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	83	411	296	514	200	227	2140	299	274	523	74	15		
2	82	618	257	429	150	264	3230	450	257	352	55	13		
3	80	328	245	391	140	255	3950	585	250	287	44	11		
4	78	236	225	325	130	247	3910	551	238	297	38	9.2		
5	78	206	435	326	125	247	1950	486	222	275	33	8.0		
6	79	188	1210	297	125	699	1190	404	219	219	29	7.7		
7	94	181	1380	300	130	1410	1110	470	214	195	27	5.8		
8	153	174	931	300	135	1020	845	728	198	178	24	5.2		
9	771	167	416	300	140	542	944	473	188	164	23	4.5		
10	1060	163	334	376	145	421	1510	395	310	153	21	4.3		
11	373	415	287	442	160	372	1940	354	923	143	19	4.0		
12	248	840	271	274	180	343	1800	333	371	132	17	3.8		
13	203	833	270	248	200	342	2050	323	413	121	14	3.7		
14	180	651	250	240	350	337	2560	333	1170	113	13	3.5		
15	164	514	240	227	1320	339	2280	341	1530	106	13	8.0		
16	150	417	205	222	1700	359	1170	325	759	99	21	11		
17	142	378	183	220	1250	345	816	287	410	93	13	10		
18	132	340	185	210	1010	343	719	300	357	88	11	8.7		
19	128	324	180	200	1050	319	641	478	574	82	9.4	6.8		
20	128	317	175	190	1330	303	569	873	446	75	7.4	31		
21	136	287	158	180	896	303	511	548	315	70	5.4	40		
22	134	251	151	170	609	286	479	520	271	62	5.5	22		
23	122	234	155	150	503	284	445	520	241	55	4.4	10		
24	116	212	296	150	445	285	407	401	221	49	4.4	5.5		
25	113	189	723	140	393	281	377	373	206	45	4.0	12		
26	109	189	561	130	333	291	351	342	192	47	5.3	7.1		
27	107	187	376	125	305	375	342	304	183	45	5.1	5.0		
28	136	233	1280	130	291	421	318	558	242	42	6.2	5.5		
29	291	375	1600	150	---	573	302	431	756	44	5.1	5.2		
30	309	353	2000	400	---	932	292	311	947	129	9.8	5.0		
31	217	---	988	300	---	1630	---	282	---	136	9.8	---		
TOTAL	5196	10221	15314	8057	13746	14397	39359	13398	13008	4423	574.8	292.7		
MEAN	200	341	526	260	491	464	1312	432	434	143	18.5	9.75		
MAX	1060	840	2000	514	1700	1630	3950	873	1530	523	74	40		
MIN	78	163	151	125	125	227	292	282	183	42	4.0	3.5		
CFSM	.57	.98	1.51	.75	1.41	1.33	3.75	1.24	1.24	.41	.05	.03		
IN.	.66	1.09	1.74	.86	1.47	1.53	4.20	1.43	1.39	.47	.06	.03		
AC-FT	12290	20270	32350	15000	27270	28560	78070	26570	25800	8770	1140	581		
CAL YR 1982	TOTAL	150558.0	MEAN	413	MAX	4020	MIN	23	CFSM	1.18	IN	16.06	AC-FT	298800
WTR YR 1983	TOTAL	139995.5	MEAN	384	MAX	3950	MIN	3.5	CFSM	1.10	IN	14.92	AC-FT	277700

DES MOINES RIVER BASIN

05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.--Lat 41°25'27", long 93°35'09", in SW1/4 SE1/4 sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft downstream from bridge on county highway, 0.4 mi upstream from Cavitt Creek, 1.5 mi upstream from bridge on U.S. Highway 69, and 4.6 mi northwest of Indianola.

DRAINAGE AREA.--503 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1941, 1944, 1946, 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 776.15 ft NGVD (Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, nonrecording gage and June 11, 1946, to June 8, 1947 (destroyed by flood), Nov. 24, 1948, to Sept. 7, 1961, Sept. 1, 1952, to Sept. 30, 1962, water-stage recorder at site 1.6 mi downstream at datum 2.81 ft lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 257 ft³/s, 6.94 in/yr, 186,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s June 13, 1947, gage heights: 26.40 ft, from floodmark, former site and datum; 28.27 ft, from floodmark, present site and datum; minimum daily, 0.11 ft³/s July 2, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	1645	4,640	16.67	Dec. 28	1615	*6,710	*18.34
Dec. 6	0415	4,530	16.11	Apr. 2	2200	5,910	18.33

Minimum daily discharge, 11 ft/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	299	360	639	300	338	2820	401	361	755	110	25
2	120	440	315	525	210	323	4500	526	344	505	80	23
3	118	246	283	426	200	314	3690	740	330	419	67	22
4	110	190	250	401	200	301	1690	669	313	833	60	20
5	107	169	1250	377	210	300	1290	644	296	409	54	19
6	110	157	3320	380	210	1410	1620	512	285	299	51	19
7	111	155	1480	370	210	1970	1300	491	278	261	49	17
8	218	147	926	360	215	1090	1040	680	255	236	47	17
9	2650	147	648	370	220	679	1460	506	238	216	46	16
10	925	143	560	400	220	519	2660	433	227	196	45	15
11	453	966	480	500	230	453	1690	402	1200	181	43	15
12	329	3260	460	390	250	419	2450	382	450	168	43	16
13	272	1090	480	325	270	417	2570	371	348	157	41	12
14	239	565	520	320	600	404	2080	388	465	145	38	11
15	216	434	480	290	2010	406	1600	399	1710	137	36	16
16	195	373	450	254	1740	420	1130	391	654	130	35	18
17	179	341	440	250	1430	505	964	343	489	123	33	15
18	165	316	430	240	1200	559	841	367	587	118	31	16
19	156	309	420	230	1440	448	761	632	522	111	30	18
20	157	314	420	220	1640	419	683	1690	400	106	29	38
21	155	286	430	220	1220	401	631	795	315	98	26	33
22	153	259	450	210	811	378	586	698	274	91	26	22
23	150	240	500	220	666	374	551	639	241	85	25	21
24	142	215	2800	210	591	384	519	515	219	82	28	29
25	134	196	2400	200	504	373	486	491	207	78	31	24
26	132	202	1500	200	419	394	462	434	195	73	28	20
27	129	203	1900	220	377	531	437	403	184	71	25	17
28	190	393	5000	250	354	673	417	1070	271	68	24	14
29	502	701	2280	350	---	949	404	528	964	75	22	13
30	306	456	1110	600	---	1810	393	426	1690	88	28	12
31	211	---	814	500	---	3240	---	384	---	201	27	---
TOTAL	9150	13212	33157	10448	17947	21201	41715	17349	14312	6515	1258	572
MEAN	295	440	1070	337	641	684	1391	550	477	210	40.6	19.1
MAX	2650	3260	5000	639	2010	3240	4500	1690	1710	833	110	38
MIN	107	143	260	200	200	300	393	343	184	68	22	11
CFSM	.59	.88	2.13	.67	1.27	1.36	2.77	1.11	.95	.42	.08	.04
IN.	.68	.98	2.45	.77	1.33	1.57	3.09	1.28	1.06	.48	.09	.04
AC-FT	18150	26210	65770	20720	35600	42050	82740	34410	28390	12920	2500	1130

CAL YR 1982	TOTAL	197409	MEAN	541	MAX	6340	MIN	16	CFSM	1.08	IN	14.60	AC-FT	391600
WTR YR 1983	TOTAL	186836	MEAN	512	MAX	5000	MIN	11	CFSM	1.02	IN	13.82	AC-FT	370600

05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in SE1/4 SE1/4 sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Otter Creek, and 2.2 mi southwest of Ackworth.

DRAINAGE AREA.--460 mi².

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (M), 1946.

GAGE.--Water-stage recorder. Datum of gage is 769.97 ft NGVD. Prior to June 12, 1946, nonrecording gage, June 13, 1946, to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960, to Sept. 30, 1961, nonrecording gage, all at site 4.0 mi downstream at datum 8.06 ft lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 245 ft³/s, 7.23 in/yr, 177,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s June 5, 1947, gage height, 24.60 ft, site and datum then in use; maximum gage height, 32.85 ft July 5, 1981; no flow Sept. 19 to Oct. 13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft, from information by local residents, discharge, about 30,000 ft³/s, at site 4.0 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 5	2130	8,520	19.98	Apr. 2	1445	7,450	19.77
Dec. 28	0545	*10,300	*21.47	Apr. 12	2045	5,350	17.12

Minimum daily discharge, 5.0 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	67	208	379	339	190	166	1600	225	224	219	9.7	22		
2	66	202	332	300	140	154	5380	890	215	125	9.9	20		
3	69	157	299	274	130	144	3520	463	217	105	11	18		
4	65	131	243	262	120	137	1080	358	272	324	9.0	18		
5	63	122	3500	247	120	154	867	298	201	121	9.0	19		
6	186	125	4590	241	125	1600	1590	265	194	70	9.0	19		
7	282	119	1210	230	125	1210	878	412	176	63	10	18		
8	2020	116	731	202	130	511	604	368	160	57	8.6	14		
9	1960	112	487	200	140	323	1450	272	150	51	8.2	9.2		
10	534	116	470	220	150	273	2470	249	142	44	8.1	5.7		
11	262	1430	405	190	160	252	990	225	134	42	7.8	6.0		
12	194	2870	380	166	170	244	2510	237	132	38	7.6	6.6		
13	170	672	370	160	180	257	2280	237	128	29	7.4	7.4		
14	152	357	360	150	600	239	1560	254	318	30	7.8	7.8		
15	139	268	350	140	2090	240	986	255	373	30	8.5	18		
16	128	263	340	135	1570	252	614	215	203	23	8.1	19		
17	119	237	330	130	1240	215	504	199	190	18	8.0	14		
18	117	219	330	125	775	201	479	316	387	18	7.4	8.6		
19	114	226	330	120	1350	197	444	926	215	23	7.2	8.2		
20	111	230	330	120	1050	208	379	487	139	17	7.2	43		
21	107	193	325	115	671	212	343	438	98	14	8.1	24		
22	102	170	336	120	492	195	323	1040	81	14	8.2	10		
23	100	164	354	125	388	221	304	488	68	13	9.1	7.7		
24	98	135	2150	120	332	237	273	383	61	12	9.0	6.3		
25	96	134	1510	115	269	223	255	559	66	11	9.0	6.7		
26	92	160	726	115	220	289	244	333	64	11	8.1	6.2		
27	93	122	915	120	203	808	223	285	60	11	7.0	5.9		
28	152	957	7170	130	181	1240	217	278	103	10	13	5.3		
29	550	1060	1490	400	---	2070	210	314	343	12	17	5.2		
30	258	534	508	1000	---	3080	205	284	650	13	27	5.0		
31	169	---	429	340	---	2850	---	234	---	11	33	---		
TOTAL	8645	11809	31679	6651	13311	18402	32782	11787	5764	1579	318.0	383.8		
MEAN	279	394	1022	215	475	594	1093	380	192	50.9	10.3	12.8		
MAX	2020	2870	7170	1000	2090	3080	5380	1040	650	324	33	43		
MIN	63	112	243	115	120	137	205	199	60	10	7.0	5.0		
CFSM	.61	.86	2.22	.47	1.03	1.29	2.38	.83	.42	.11	.02	.03		
IN.	.70	.95	2.56	.54	1.08	1.49	2.65	.95	.47	.13	.03	.03		
AC-FT	17150	23420	62840	13190	26400	36500	65020	23380	11430	3130	631	761		
CAL YR 1982	TOTAL	219844.0	MEAN	602	MAX	13300	MIN	21	CFSM	1.31	IN	17.78	AC-FT	436100
WTR YR 1983	TOTAL	143110.8	MEAN	392	MAX	7170	MIN	5.0	CFSM	.85	IN	11.57	AC-FT	283900

DÉS MOINES RIVER BASIN

05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", long 93°16'08", in NW1/4 NW1/4 sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Kirk Branch, and 1.7 mi northwest of Dallas.

DRAINAGE AREA.--342 mi².

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 759.21 ft (revised) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--21 years, 201 ft³/s, 7.98 in/yr, 145,600 acre-ft/yr; median of yearly mean discharges, 160 ft³/s, 6.4 in/yr, 116,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,300 ft³/s July 16, 1982, gage height, 33.45 ft; minimum daily, 0.07 ft³/s Sept. 29, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962, reached a stage of 28.87 ft, from floodmark, discharge, about 12,000 ft³/s. Flood of June 6, 1947, may have been slightly higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	0330	*10,100	*24.49	May 29	0245	3,060	14.64
Nov. 12	0100	3,390	14.85	Apr. 2	2116	6,820	20.67
Dec. 5	2300	4,630	18.69	Apr. 13	0430	3,470	15.40
Dec. 28	0830	4,470	18.43				

Minimum daily discharge, 1.8 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	132	311	270	160	132	1280	165	72	240	4.3	6.0
2	44	120	270	220	130	122	5070	200	68	110	4.2	4.3
3	42	84	230	180	110	114	4960	660	90	70	4.4	3.7
4	40	68	203	170	100	108	2200	300	130	150	4.1	3.4
5	43	60	2640	160	95	111	799	185	84	80	3.9	3.2
6	200	57	3690	150	92	1010	1580	170	68	45	3.8	3.1
7	216	58	1980	140	94	984	1210	200	60	30	4.5	3.0
8	1900	66	426	135	96	414	562	250	53	24	3.9	2.8
9	8980	54	198	125	98	219	842	190	50	21	3.8	2.6
10	3370	53	180	150	100	170	1770	166	49	18	3.7	2.4
11	745	896	160	120	110	154	1150	150	48	16	3.6	2.3
12	333	2670	150	100	120	147	1410	145	47	15	3.5	2.4
13	213	1760	140	95	140	162	2930	150	75	13	3.4	2.5
14	169	362	130	90	1400	143	1810	155	100	14	3.4	2.6
15	142	194	120	84	1820	130	1040	150	120	12	3.6	2.8
16	116	163	110	80	1640	122	573	145	100	11	3.4	4.1
17	103	148	100	70	1140	110	393	136	80	9.0	3.3	4.4
18	95	133	96	64	704	105	356	126	110	8.0	3.2	3.6
19	89	139	92	62	909	97	326	120	88	9.0	3.2	3.0
20	90	143	90	60	859	102	282	160	68	7.6	3.2	3.4
21	83	125	86	58	605	107	261	120	58	6.8	3.3	5.1
22	64	107	91	60	427	96	247	190	50	6.4	3.7	4.5
23	63	103	102	58	336	99	220	140	44	6.0	4.1	3.6
24	61	88	662	56	276	105	206	125	41	5.6	3.9	2.5
25	58	79	1510	54	228	101	190	115	40	5.3	3.7	2.7
26	56	88	743	54	188	151	180	105	39	5.0	3.3	2.6
27	56	83	727	54	164	1180	170	100	38	4.8	3.1	2.3
28	73	968	3650	58	147	2010	160	93	37	4.7	3.6	2.1
29	206	1180	2330	350	---	2770	155	120	130	4.6	4.3	1.9
30	297	518	656	450	---	2580	160	90	440	4.5	5.0	1.8
31	127	---	382	190	---	1930	---	78	---	4.4	7.0	---
TOTAL	18120	10686	22255	3967	12288	15775	32471	5196	2477	960.7	119.4	94.7
MEAN	585	356	718	128	439	509	1082	168	82.6	31.0	3.85	3.16
MAX	8980	2670	3690	450	1820	2770	5070	660	440	240	7.0	6.0
MIN	40	53	86	54	92	96	150	78	37	4.4	3.1	1.8
CFSM	1.71	1.04	2.10	.37	1.28	1.49	3.16	.49	.24	.09	.01	.009
IN.	1.97	1.16	2.42	.43	1.34	1.72	3.53	.67	.27	.10	.01	.01
AC-FT	35940	21200	44140	7870	24370	31290	64410	10310	4910	1910	237	188

CAL YR 1982	TOTAL	210584.0	MEAN 577	MAX 23400	MIN 10	CFSM 1.69	IN 22.91	AC-FT 417700
WTR YR 1983	TOTAL	124409.8	MEAN 341	MAX 8980	MIN 1.8	CFSM 1.00	IN 13.53	AC-FT 246800

DES MOINES RIVER BASIN

054885Q0 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW1/4 SE1/4 sec.19, T.75 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 250 ft upstream from abandoned Bellefontaine Bridge, 0.5 mi downstream from bridge on old State Highway 92 (now relocated), 0.8 mi east of Tracy, 3.1 mi upstream from Cedar Creek, 3.8 mi downstream from bridge on newly located State Highway 92, 6.4 mi downstream from English Creek, and at mile 130.4.

DRAINAGE AREA.--12,479 mi².

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 670.91 ft NGVD. Prior to June 26, 1940, and June 30, 1952, to Nov. 4, 1960, nonrecording gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at site 250 ft downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years, 4,802 ft³/s, 5.23 in/yr, 3,479,000 acre-ft/yr; median of yearly mean discharges, 4,160 ft³/s, 4.5 in/yr, 3,010,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s, June 14, 1947, gage height, 26.5 ft; minimum daily, 40 ft³/s Jan. 29 to Feb. 1, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft, discharge, about 130,000 ft³/s. Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,300 ft³/s Apr. 13, gage height, 15.57 ft; minimum daily, 1,360 ft³/s Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3150	9800	10500	25000	10800	25900	27800	18100	19400	22200	21500	8820
2	3130	9950	10100	25600	9060	25800	24400	18100	22100	21800	21500	7380
3	3110	9180	9940	23500	4330	25600	19600	17500	22900	22000	21300	4190
4	3060	8350	2190	21100	3970	25400	12200	17500	22200	22100	21100	2690
5	3840	5990	2000	18400	4560	25300	13300	17600	21700	22200	21100	2450
6	7800	3750	5140	14200	4100	25100	16200	17600	21600	22200	21200	2120
7	12600	4670	4770	11300	3670	25200	18300	17800	21500	22300	20900	1990
8	12700	7410	1750	10700	3880	26100	25400	17900	21600	21700	20700	1690
9	15400	7110	1670	9950	4070	26200	27400	17900	21900	20700	20400	1500
10	13600	6540	8420	10600	3690	26400	26600	18000	21800	20700	19400	1370
11	13400	6470	15000	10600	3360	26600	23300	18000	21700	20700	18300	1370
12	16100	8600	16500	9310	4670	26800	26100	18000	21600	20800	17900	1380
13	16500	14800	15600	8160	5960	27100	27100	18100	21500	21300	17600	1370
14	16500	16500	14600	8130	5360	27300	23800	18100	21400	21600	17200	1380
15	16300	17500	14500	8370	8690	25700	25500	18100	21300	21600	16900	1390
16	16200	17500	14500	7070	17100	20100	26500	18000	21400	21500	16900	1360
17	13300	17400	14400	4040	19800	14600	27200	18000	21400	21400	17800	1620
18	8220	17400	14300	3900	19300	8110	26900	18100	21600	21300	18000	1440
19	7140	17300	14200	4730	21000	5870	26500	18200	21600	21300	17600	1780
20	7100	17200	14100	4900	22600	5900	26000	18300	21400	21200	18100	2530
21	7680	14000	13900	4890	22400	5910	20700	18300	21600	21600	18600	3600
22	9250	10200	13900	5030	23900	7080	17900	18400	22000	22200	18500	4650
23	8660	10200	13700	5630	25700	10800	18000	18500	22000	22100	18400	5930
24	8960	10200	13800	6040	25800	13700	18100	18400	22000	21900	18400	6050
25	9470	10100	14300	5630	25900	22300	18200	18300	21900	21800	18400	6080
26	9480	10100	13900	6250	26000	26100	18300	18300	21900	21600	18100	5720
27	9010	9640	13900	6860	26000	27600	18100	18200	22000	21400	17800	4810
28	8360	9240	17100	5120	26000	28200	17900	18300	22100	21300	14900	4100
29	8840	10100	20300	3610	---	27600	18000	18300	22200	21500	9960	3100
30	9530	10500	23400	6870	---	26300	18000	18300	22500	21900	9420	2890
31	9510	---	26300	10800	---	26600	---	18200	---	21800	9170	---
TOTAL	308000	327700	388680	307190	381670	667270	663300	560400	651800	669700	557150	96760
MEAN	9935	10920	12540	9909	13630	21520	21780	18080	21730	21600	17970	3225
MAX	16600	17500	26300	26000	26000	28200	27800	18500	22900	22300	21600	8820
MIN	3060	3750	1670	3610	3360	5870	12200	17500	19400	20700	9170	1360
AC-FT	610900	650000	770900	609300	757000	1324000	1296000	1112000	1293000	1328000	1105000	191900
CAL YR 1982 TOTAL	4113799		MEAN 11270		MAX 26300	MIN 560	CFSM .90	IN 12.26	AC-FT 8160000			
WTR YR 1983 TOTAL	6669620		MEAN 16260		MAX 28200	MIN 1360	CFSM 1.22	IN 16.60	AC-FT 11050000			

05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft downstream from bridge on State Highway 156, 0.8 mi downstream from North Cedar Creek, 1.6 mi northwest of Bussey, 3.0 mi upstream from Honey Creek, and 8.9 mi upstream from mouth.

DRAINAGE AREA.--374 mi².

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 682.15 ft NGVD (levels by Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Two discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--36 years, 214 ft³/s, 7.77 in/yr, 155,000 acre-ft/yr; median of yearly mean discharges, 180 ft³/s, 6.5 in/yr, 130,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 96,000 ft³/s July 3, 1982, gage height, 34.61 ft; no flow Sept. 6-20, 1955, Oct. 11, 12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft on upstream side and 28.05 ft on downstream side of bridge, levels to floodmarks by Corps of Engineers, discharge, 31,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	1730	9,530	22.66	Dec. 28	1515	6,260	19.84
Nov. 12	1330	5,000	18.27	Apr. 2	2300	*11,200	*23.77
Dec. 6	1030	7,830	21.34	Apr. 13	0615	4,400	17.16

Minimum daily discharge, 2.5 ft³/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	87	278	230	120	163	717	174	92	91	5.4	45
2	56	91	542	180	100	157	6840	353	85	50	5.4	23
3	54	88	615	160	96	152	8220	252	130	33	3.9	13
4	52	74	273	150	94	149	1470	195	238	27	3.9	7.7
5	51	69	3270	140	92	157	908	169	108	27	4.5	5.6
6	66	69	6930	130	94	701	1780	161	82	23	6.4	5.1
7	81	69	1170	120	97	1330	843	205	75	18	5.3	4.2
8	70	70	511	115	99	482	519	179	66	16	4.3	4.8
9	6100	72	283	120	96	255	1440	154	57	14	3.7	5.1
10	2970	72	250	130	95	199	2740	143	48	15	3.5	4.0
11	367	390	230	115	100	189	943	142	43	12	3.2	4.3
12	228	4210	210	100	105	181	1090	158	39	12	2.6	3.6
13	183	1070	190	94	110	182	3460	163	36	9.4	2.6	3.4
14	159	283	181	88	800	179	1540	163	33	9.6	2.8	3.2
15	140	195	175	86	2000	160	967	156	38	9.1	2.8	18
16	124	177	170	84	2140	149	546	142	36	9.2	2.8	22
17	113	164	167	82	1430	138	420	131	35	7.9	2.8	25
18	108	151	165	80	698	132	427	144	267	7.2	2.9	14
19	106	151	160	78	1010	129	384	213	293	7.0	3.1	135
20	108	158	155	76	857	129	322	204	123	6.9	3.5	145
21	99	137	149	74	531	142	287	166	67	6.4	2.5	88
22	88	119	148	76	385	125	266	398	51	6.4	3.3	39
23	88	117	160	74	314	124	249	203	40	7.2	4.2	20
24	85	112	750	72	262	133	226	126	36	5.7	3.0	9.8
25	84	95	1250	70	225	131	209	112	31	6.6	3.1	10
26	82	101	485	69	192	145	205	106	29	5.2	3.4	9.1
27	81	99	378	68	184	1490	194	94	30	4.9	3.8	5.8
28	84	894	5080	70	174	2290	185	109	56	5.0	2.8	3.6
29	145	1080	1170	90	---	2430	180	166	75	4.7	2.8	3.5
30	133	426	388	150	---	1640	174	110	171	4.8	57	3.2
31	99	---	280	130	---	879	---	95	---	5.0	74	---
TOTAL	12262	10890	26163	3301	12500	14842	37751	5286	2510	466.2	235.3	683.0
MEAN	396	363	844	106	446	479	1258	171	83.7	15.0	7.59	22.8
MAX	6100	4210	6930	230	2140	2430	8220	398	293	91	74	145
MIN	51	69	148	68	92	124	174	94	29	4.7	2.5	3.2
CFSM	1.06	.97	2.26	.28	1.19	1.28	3.36	.46	.22	.04	.02	.06
IN.	1.22	1.08	2.60	.33	1.24	1.48	3.75	.53	.25	.05	.02	.07
AC-FT	24320	21600	51890	6550	24790	29440	74880	10480	4980	925	467	1350
CAL YR 1982	TOTAL	287492.0	MEAN 788	MAX 42000	MIN 16	CFSM 2.11	IN 28.60	AC-FT 570200				
WTR YR 1983	TOTAL	126889.5	MEAN 348	MAX 8220	MIN 2.5	CFSM .93	IN 12.62	AC-FT 251700				

DES MOINES RIVER BASIN

05489500 DES MOINES RIVER AT OTTUMWA, IA

LOCATION.--Lat 41°00'39", long 92°24'40", in SE1/4 NE1/4 sec.25, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, on right bank 15 ft downstream from Wabash Railroad Bridge at Ottumwa, 0.4 mi downstream from Ottumwa powerplant, 6.5 mi upstream from Village Creek, 9.5 mi downstream from South Avery Creek, and at mile 94.1.

DRAINAGE AREA.--13,374 mi².

PERIOD OF RECORD.--March 1917 to current year (published as "at Eldon" October 1930 to March 1935). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1917-20. WSP 1308: 1917-23 (M), 1925-27 (M), 1931. WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.00 ft NGVD. Prior to Sept. 30, 1930, nonrecording gages at Market Street Bridge 1,700 ft upstream at datum 0.83 ft higher. Oct. 1, 1930, to Mar. 31, 1935, nonrecording gage at Eldon 15 mi downstream at different datum. Apr. 1, 1935, to Oct. 25, 1963, water-stage recorder at site 1,100 ft downstream at Vine Street Bridge at datum 0.77 ft higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 12, 1958, and since Nov. 30, 1960, diurnal fluctuation at low flow caused by powerplant above station. Flow regulated by Lake Red Rock (station 05488100) 48.2 mi upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--66 years, 5,297 ft³/s, 5.38 in/yr, 3,838,000 acre-ft/yr; median of yearly mean discharges, 4,610 ft³/s, 4.7 in/yr, 3,340,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft³/s June 7, 1947, gage height, 20.2 ft, site and datum then in use; minimum daily, 30 ft³/s Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft, former site and datum at Vine Street Bridge or about 22 ft at Market Street Bridge, from information by Corps of Engineers and National Weather Service, discharge, about 140,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,800 ft³/s Apr. 2, gage height, 12.72 ft; minimum daily, 1000 ft³/s Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	2620	9230	11000	25700	11500	25100	28700	19400	18600	22400	21500	8400	
2	2500	9960	12200	25300	11400	24900	35500	20400	21400	21900	21400	7350	
3	2510	8920	11400	24600	6000	24800	34200	19100	23600	22100	21200	4830	
4	2480	8640	7790	21400	4480	24700	22200	18700	22900	22200	21000	2580	
5	2550	6480	7680	20300	4930	24700	16200	18600	22100	22200	20700	1960	
6	4510	3800	12300	17300	5160	25900	20500	18600	22000	22400	20900	1920	
7	11100	2870	10300	12900	4860	25600	20200	18800	22100	22400	20700	1760	
8	12700	5380	5180	12300	3960	25600	25600	18900	22700	22500	20400	1450	
9	17600	6610	2000	11300	4350	25300	30300	18800	22700	21100	20100	1230	
10	19100	5740	3870	11300	4900	25200	32200	18900	22500	21000	19700	1180	
11	13500	6310	12900	12200	4010	25200	28700	18900	22400	20900	18000	1100	
12	15700	11700	16800	11100	3980	25500	28000	19000	22300	20900	17500	1060	
13	16300	15200	17000	9590	6510	25700	33500	18900	22100	21300	17200	1020	
14	16300	16100	15400	8890	7490	26000	31100	18900	21900	21800	16800	1010	
15	16100	17500	15100	8610	10200	26300	28700	18800	21800	21800	16400	1040	
16	15900	17600	14900	9790	17200	23100	28900	18800	21900	21700	16200	1070	
17	15400	17500	14800	6620	21400	18300	29700	18700	22000	21600	16600	1000	
18	9480	17400	14700	4800	20200	12200	30000	18700	23200	21600	17300	1330	
19	7300	17300	14500	4300	20500	7510	29600	19000	22200	21500	17100	1840	
20	6580	17200	14400	4200	23100	6990	29500	19000	21800	21300	17000	1900	
21	6430	16700	14200	4800	22600	6940	25600	19000	22200	21300	17800	2460	
22	8520	11900	14000	5350	22700	6940	19200	19100	22300	22300	17800	3480	
23	8410	11200	13800	5730	24600	10900	19000	19200	22200	22200	17800	4100	
24	8180	10700	14000	6550	25000	12400	19100	19000	22100	22000	17600	5000	
25	9010	10400	15100	6130	25000	19600	19200	18900	22100	21900	17800	5300	
26	9110	10300	14600	6080	25100	25000	19200	18700	22000	21700	17500	5400	
27	9040	10200	13900	7090	25100	27600	19200	18700	22000	21500	17200	5300	
28	8050	10500	19300	7420	25100	29300	18700	18600	22200	21300	16700	5000	
29	7970	11400	21200	4140	---	30200	18700	18800	23000	21200	10700	4200	
30	9140	11600	21700	4960	---	29200	18800	18600	22800	21800	9000	3300	
31	9200	---	25400	10700	---	27800	---	18500	---	21700	8520	---	
TOTAL	303290	336340	421420	331450	391330	674380	760000	586000	665100	673500	546120	88570	
MEAN	9784	11210	13590	10690	13980	21750	25330	18900	22170	21730	17620	2952	
MAX	19100	17600	25400	25700	25100	30200	35500	20400	23600	22500	21500	8400	
MIN	2480	2870	2000	4140	3960	6940	16200	18500	18600	20900	8520	1000	
AC-FT	601600	667100	835900	657400	776200	1338000	1507000	1162000	1319000	1336000	1083000	175700	
CAL YR 1982 TOTAL	4311770	MEAN	11810	MAX	41200	MIN	540	CFSM	.88	IN	11.99	AC-FT	8552000
WTR YR 1983 TOTAL	5777500	MEAN	15830	MAX	35500	MIN	1000	CFSM	1.18	IN	16.07	AC-FT	11460000

05490500 DES MOINES RIVER AT KEOSAUQUA, IA

LOCATION.--Lat 40°43'40", long 91°57'34", in SE1/4 SW1/4 sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi downstream from Chequest Creek, and at mile 51.3.

DRAINAGE AREA.--14,038 mi².

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1913-20. WSP 1438: Drainage area. WSP 1508: 1903, 1905-6, 1915-18 (M), 1922 (M), 1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 547.36 ft NGVD. Prior to Dec. 24, 1933, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, at same site at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi upstream, since March 12, 1969. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--74 years (water years 1904-05, 1912-83), 5,708 ft³/s, 5.52 in/yr, 4,135,000 acre-ft/yr; median of yearly mean discharges, 4,990 ft³/s, 4.8 in/yr, 3,620,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft³/s June 1, 1903, gage height, 27.85 ft, from flood-mark, datum then in use; minimum daily, 40 ft³/s Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,600 ft³/s Apr. 4, gage height, 20.90 ft; minimum daily, 1,400 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3620	9470	11100	26400	10500	25500	29300	18800	18400	23100	21800	8740
2	3670	9720	21600	26300	10700	25500	35600	20800	19700	22500	21600	8320
3	3620	9890	15300	25800	9410	25400	35600	19700	24800	22000	21400	7100
4	3630	8960	11600	23500	4880	25400	29500	20000	24300	22300	21300	4630
5	3640	8380	14000	21100	3910	25500	16200	18200	22800	22300	21100	2970
6	3800	6700	18800	18400	4780	29400	18800	18300	22100	22400	21200	2610
7	6430	4710	13300	14500	5210	27700	19200	18300	22000	22400	21200	2380
8	11800	4450	8390	11700	4010	26800	20500	18100	21700	22400	20900	2190
9	14200	6920	5280	11200	3690	25300	30600	18600	22000	21700	20600	1820
10	20000	7120	3290	10500	4880	26200	34900	18500	22200	20800	20300	1600
11	16000	7450	7240	10900	4970	26200	30700	18600	22100	20800	19300	1500
12	13600	13200	14900	10900	4280	26300	25800	18800	21900	20700	18100	1470
13	15800	14400	16800	10100	4680	26500	31400	19000	21800	20900	17700	1430
14	16200	15600	15900	8770	7500	26800	32200	18900	21700	21400	17400	1400
15	16000	16300	16000	8620	10500	26900	27500	18800	21600	21700	17000	1500
16	15800	17100	14800	8380	20000	25300	27100	18900	21500	21600	16700	1540
17	15600	17000	14600	8150	23000	19800	27500	18800	21500	21600	16600	1470
18	13200	17000	14600	5460	25000	14600	28100	18700	21700	21500	17400	1450
19	8660	16900	14500	4210	23500	8850	27900	19500	24200	21400	17700	2080
20	7450	16900	14400	4640	24500	6730	27400	19500	23500	21300	17400	2540
21	7200	16700	14200	5870	25000	6380	26500	19300	21900	21200	17900	2570
22	7450	13800	13900	6060	24000	6000	22400	19400	22000	21600	18500	3240
23	9020	10300	13800	5740	24000	6600	18200	19600	22300	22200	18400	4330
24	8520	9970	13900	5890	25600	9980	18000	19200	22200	22100	18200	5510
25	8710	9880	14900	6430	25500	13000	18100	19000	22100	22000	18200	5800
26	9240	9840	15300	5920	25500	21600	18200	18400	22100	21800	18200	5850
27	9220	9810	14200	6170	25500	31200	18400	18400	22100	21600	17800	5600
28	9050	11200	17700	6890	25600	32900	18200	18400	22100	21400	17400	4830
29	8290	11900	21900	6540	---	31300	18000	18600	22400	21300	14600	4210
30	8660	11700	21000	4230	---	30500	18000	18600	23300	21600	10200	3300
31	9410	---	23600	6420	---	28200	---	18500	---	21900	9230	---
TOTAL	307490	343270	449800	335590	410600	688340	749800	586200	664000	673500	565330	103980
MEAN	9919	11440	14510	10830	14650	22200	24990	18910	22130	21730	18240	3465
MAX	20000	17100	23600	26400	25600	32900	35600	20800	24800	23100	21800	8740
MIN	3620	4450	3290	4210	3690	6000	16200	18100	18400	20700	9230	1400
AC-FT	609900	680900	892200	665600	814400	1356000	1487000	1163000	1317000	1336000	1121000	206200
CAL YR 1982 TOTAL		4640310		MEAN 12710	MAX 64900	MIN 570	CFSM .91	IN 12.30	AC-FT 9204000			
WTR YR 1983 TOTAL		5877900		MEAN 16100	MAX 35600	MIN 1400	CFSM 1.15	IN 15.58	AC-FT 11660000			

MISSOURI RIVER BASIN
BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW1/4 SW1/4 sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 3 ft upstream from bridge on county highway K30, 0.3 mi north of Rock Valley and at mile 19.1.

DRAINAGE AREA.--1,592 mi².

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.54 ft NGVD. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft gage height June 4, 1949, to Aug. 12, 1952, and Aug. 13, 1952, to May 4, 1976, water-stage recorder, at site 3.2 mi downstream at datum 10.73 ft lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--35 years, 355 ft³/s, 3.03 in/yr, 257,200 acre-ft/yr; median of yearly mean discharges, 260 ft³/s, 2.2 in/yr, 188,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft³/s Apr. 7, 1969, gage height, 17.32 ft; no flow for many days during winter period in 1959 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft, former site and datum, discharge not determined, from information by State Highway Commission.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 12	1500	3,670	11.37	May 4	0200	3,890	11.60
Feb. 23	----	unknown	ice jam	May 9	1230	3,030	10.46
Mar. 1	0745	8,450	14.83	June 15	1700	4,970	12.36
Mar. 7	1145	10,600	15.99	June 20	1515	*19,000	*18.85
Apr. 2	2015	6,960	13.69	June 28	0700	8,680	14.96
Apr. 14	0600	10,100	15.74	July 4	0545	8,090	14.61

Minimum daily discharge, 162 ft³/s Sept. 25-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	310	737	885	900	280	8010	5630	1490	741	7780	567	282		
2	602	696	980	500	250	7180	6740	2800	730	7120	498	240		
3	960	643	1070	700	260	6470	6360	3550	729	6090	493	237		
4	999	601	1060	680	260	6290	4620	3580	707	7280	458	231		
5	827	665	1030	660	250	5110	4010	2570	674	5310	447	239		
6	738	546	967	630	250	7230	3860	2180	629	3220	394	245		
7	777	548	879	600	250	10100	4060	2250	611	2590	384	219		
8	867	540	758	580	250	8500	3840	2680	586	2230	359	209		
9	1740	549	663	660	250	4810	3690	2950	553	1980	342	201		
10	1820	1350	450	540	250	2520	3820	2290	514	1780	318	193		
11	1400	2450	400	520	250	2520	3580	1820	484	1620	300	186		
12	1190	3450	500	500	250	2600	4120	1610	470	1490	288	185		
13	1030	3100	600	480	250	2790	9390	1530	708	1390	271	181		
14	911	2250	500	460	275	2740	9420	1450	3230	1280	256	180		
15	824	1760	450	440	275	2640	6990	1360	4720	1180	247	191		
16	745	1560	450	410	300	2400	5800	1260	3980	1090	239	188		
17	686	1370	450	370	300	2200	4530	1170	2830	1060	239	181		
18	643	1340	450	340	350	2080	4090	1170	2780	1350	223	178		
19	658	1470	529	320	400	1960	3580	1300	2890	1400	215	171		
20	848	1850	504	300	500	1840	3170	1310	12700	1330	211	170		
21	1190	2010	498	290	600	1700	2970	1240	13900	1180	200	169		
22	1690	1900	511	290	800	1500	2860	1150	9220	1030	186	171		
23	1920	1460	539	290	1000	1530	2600	1070	5400	1090	180	166		
24	1940	1000	601	290	2000	1460	2280	980	3100	969	180	166		
25	1700	850	997	290	4110	1460	2040	920	2490	839	254	164		
26	1440	950	537	290	3240	1370	1840	871	2210	792	230	162		
27	1230	900	1200	290	3310	1060	1660	838	4870	760	239	162		
28	1090	874	1000	290	6670	967	1520	809	8130	739	230	162		
29	976	883	700	290	---	1210	1430	778	7140	697	237	176		
30	886	882	500	290	---	1430	1370	762	7290	657	304	214		
31	798	---	400	290	---	2280	---	751	---	621	283	---		
TOTAL	33323	39084	20948	13380	27420	106037	121870	50389	105016	67944	9272	5790		
NEAN	1076	1303	676	432	979	3421	4062	1625	3501	2192	299	193		
MAX	1940	3460	1200	700	6670	10100	9420	3580	13900	7780	567	252		
MIN	310	540	400	290	250	987	1370	751	470	621	180	162		
CFSM	.68	.82	.43	.27	.62	2.15	2.55	1.02	2.20	1.38	.19	.12		
IN.	.78	.91	.49	.31	.64	2.48	2.85	1.18	2.45	1.59	.22	.14		
AC-FT	66100	77820	41550	26540	54390	210300	241700	99950	208300	134800	18390	11480		
CAL YR 1982	TOTAL	208945	MEAN	572	MAX	5080	MIN	10	CFSM	.36	IN	4.88	AC-FT	414400
WTR YR 1983	TOTAL	600473	MEAN	1645	MAX	13900	MIN	162	CFSM	1.03	IN	14.03	AC-FT	1191000

not in data file
 06485500 BIG SIOUX RIVER AT AKRON, IA
 (National stream-quality accounting network station)

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LOCATION.--Lat 42°49'42", long 96°33'45", in NW1/4 SW1/4 sec.31, T.93 N., R.48 W., Plymouth County, Hydro-logic Unit 10170203, on left bank at west edge of Akron, 0.6 mi downstream from bridge on State Highway 48, and 2.3 mi upstream from Union Creek.

DRAINAGE AREA.--9,030 mi², approximately, of which about 1,970 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929 (M), 1931-33 (M), 1936 (M), 1938 (M), 1940 (M). WSP 1389: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,118.90 ft NGVD. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft upstream at same datum.

REMARKS.--Records good except those for the winter period, Dec. 11 to Feb. 27, which are poor. Water-quality data available in reports of Water Resources Data for South Dakota. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--55 years, 901 ft³/s, 652,700 acre-ft/yr; median of yearly mean discharges, 730 ft³/s, 529,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft³/s Apr. 9, 1969, gage height, 22.99 ft; minimum daily, 4.0 ft³/s Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Gage height (m)
Oct. 12	1730	4,680	12.70	Apr. 15	1345	15,500	19.01
Oct. 25	1015	3,530	10.86	May 5	1530	9,320	16.65
Nov. 14	1315	5,390	13.64	May 11	0115	8,880	16.45
Nov. 23	0515	5,080	13.19	June 22	0300	*34,500	*21.49
Mar. 9	1300	21,000	20.83	June 28	0515	16,300	19.28
Apr. 4	1330	12,500	17.92				

Minimum daily discharge, 503 ft³/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	510	1990	2290	1000	560	10500	5410	4340	2000	11200	1810	896
2	578	1890	2280	1000	560	13300	8310	4840	1950	11700	1700	824
3	788	1800	2350	1000	560	14400	10800	6070	1920	11500	1620	750
4	1090	1720	2500	1100	560	14000	12300	7980	1900	10500	1560	714
5	1200	1630	2690	1100	550	14300	11600	9130	1800	11100	1440	696
6	1170	1560	2670	1100	540	14900	9950	8300	1740	11200	1360	738
7	1080	1500	2540	1100	540	16600	8960	6430	1680	8660	1290	741
8	1340	1450	2310	1100	530	19400	8740	6010	1620	5920	1230	726
9	1840	1430	2140	1100	520	20800	8730	6930	1570	4860	1170	677
10	2830	1490	2120	1100	520	17500	8540	8340	1510	4240	1110	631
11	4110	2250	1900	1000	510	12200	8250	8460	1440	3790	1050	598
12	4620	3690	1700	970	510	9730	7940	6530	1390	3440	1000	576
13	4200	4690	1700	950	510	8770	8970	5080	1670	3160	961	567
14	3340	5270	1900	900	510	7990	12500	4580	3320	2930	928	558
15	2840	4570	2000	850	520	7690	15300	4220	4540	2720	901	574
16	2510	3760	2300	820	550	7290	14000	3910	5110	2560	865	586
17	2230	3410	2200	800	580	6690	11300	3580	5150	2450	832	574
18	2000	3140	2100	770	650	6060	10300	3480	4780	2690	806	567
19	1930	3030	2100	740	720	5610	10200	3490	4600	2920	774	552
20	1980	3160	2000	720	850	5300	10200	3500	8490	2840	746	539
21	2060	3850	1900	700	1000	4950	9650	3390	20000	2630	728	525
22	2370	4740	1900	700	1300	4570	9110	3240	27700	2460	705	519
23	2800	4980	1900	660	2000	4220	8760	3050	18000	2620	684	520
24	3290	4160	1900	650	3500	3960	8100	2870	12700	2600	677	516
25	3510	3370	1900	630	5000	3820	7130	2700	8160	2340	697	518
26	3360	2930	1900	620	7000	3800	6360	2580	5690	2160	837	514
27	3020	2760	1500	600	9000	3560	5710	2440	7600	2050	801	509
28	2720	2500	1200	580	10600	3120	5250	2310	15600	1990	761	503
29	2470	2390	1100	570	---	2920	4830	2210	14400	2510	721	529
30	2280	2320	1000	570	---	3110	4490	2110	12200	2130	705	574
31	2120	---	1000	560	---	3780	---	2040	---	1920	791	---
TOTAL	72186	87430	60990	26060	50750	274840	271690	144140	200230	145790	31260	18311
MEAN	2329	2914	1967	841	1813	8866	9056	4650	6674	4703	1008	610
MAX	4620	5270	2690	1100	10600	20800	15300	9130	27700	11700	1810	896
MIN	510	1430	1000	560	510	2920	4490	2040	1390	1920	677	503
CFSM	.26	.32	.22	.09	.20	.98	1.00	.52	.74	.52	.11	.07
IN.	.30	.36	.25	.11	.21	1.13	1.12	.59	.82	.60	.13	.08
AC-FT	143200	173400	121000	51690	100700	545100	538900	285900	397200	289200	62000	36320
CAL YR 1982 TOTAL		496570	MEAN 1360	MAX 6000	MIN 26	CFSM .15	IN 2.05	AC-FT 984900				
WTR YR 1983 TOTAL		1383677	MEAN 3791	MAX 27700	MIN 503	CFSM .42	IN 5.70	AC-FT 2745000				

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°29'09", long 96°24'49", in NW1/4 SE1/4 sec.16, T.29 N., R.9 E., sixth principal meridian, Dakota County, Nebraska. Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi downstream from Big Sioux River, and at mile 732.3. Prior to Jan. 31, 1981, at site 227 ft downstream.

DRAINAGE AREA.--314,600 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congress, 2d session, Missouri River. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft NGVD. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at site 227 ft downstream at datum 19.98 ft higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft higher. Oct. 1, 1970 to Jan. 30, 1981, water-stage recorder at site 227 ft downstream at present datum.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--86 years, 31,990 ft³/s, 23,180,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s Apr. 14, 1952, gage height, 24.28 ft, datum then in use; minimum, 2,500 ft³/s Dec. 29, 1941; minimum gage height, 9.00 ft Jan. 8, 1980, based on gage readings at site 14 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50,200 ft³/s Nov. 24, maximum gage height, 22.78 ft June 29; minimum daily discharge, 23,300 ft³/s Jan. 18; minimum gage height, 14.60 ft Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35000	39100	48700	27000	25600	40800	37300	29200	31600	35600	40300	37700
2	34900	38900	49200	26800	25200	40900	34700	31800	31500	38100	40700	37800
3	33900	38800	49700	26600	24600	41900	28700	34300	31700	35500	40900	36400
4	34000	39000	48100	26300	24100	40800	27000	34700	31400	34500	40600	37900
5	34300	42600	46500	27000	25400	38400	30400	33300	31400	34000	39900	38200
6	34900	41100	45000	27100	25400	38100	34900	32900	31200	33800	39800	38100
7	35600	41100	42500	27300	24700	40600	35000	32800	30900	35400	39500	37600
8	36100	41100	41000	26400	25400	41600	33600	31400	31000	34300	39200	37300
9	38700	41600	40300	27100	25000	38200	32800	30100	30900	32700	38900	38000
10	38000	42300	39500	27100	25700	37800	33100	28800	30900	31400	38500	36500
11	39300	42600	38600	26500	25600	38800	32600	30000	30600	30900	38500	37500
12	40400	44600	35200	25300	26000	37000	33100	30300	29900	30500	38000	37200
13	40900	44700	33400	27300	26000	36000	36800	29900	30900	31000	38300	37100
14	41200	45300	31000	26100	26200	35500	37400	28900	32200	32500	38500	36700
15	40100	44400	29200	24700	25700	36200	31200	29000	26000	33900	38500	37800
16	40500	44200	28500	24800	25800	34400	30100	29900	23700	35100	38800	36800
17	39900	44400	28900	24100	26300	32800	32400	30500	24700	36300	38800	37000
18	38900	46000	29300	23300	26400	33200	31600	31900	29100	37100	38600	37500
19	38700	47400	28700	25000	27000	33700	29800	31900	27400	37400	38100	37600
20	40200	47600	28500	25300	27200	35000	29500	31500	30900	39600	37700	36400
21	39200	47600	28400	25100	28200	35200	30000	31400	36000	39200	38200	37200
22	40100	48900	28300	26500	29400	34900	30400	31200	37400	39100	38200	36100
23	40300	49900	28300	25200	31000	34300	30800	31100	30400	41700	38300	37000
24	40400	49700	28500	25200	32700	33600	31200	31100	30800	41400	38600	36900
25	40000	48700	28700	25400	33600	33900	31600	31800	31200	40100	39100	37400
26	39600	48300	26600	24600	34000	34600	31200	32200	29100	39400	39000	37300
27	39900	47700	28500	24500	35500	34200	30900	32100	29400	39500	39200	37200
28	40300	48100	26800	25000	38100	32800	30600	31800	40700	39200	39100	36300
29	40500	48000	25800	26500	---	32500	29900	32000	44000	39200	38900	38300
30	39800	48400	27100	25500	---	32600	29300	32000	36700	39700	38500	38100
31	39400	---	26900	25000	---	34100	---	31800	---	40000	38000	---
TOTAL	1195000	1342100	1065700	799600	776500	1124400	957900	971600	942600	1128100	1207600	1118900
MEAN	38550	44740	34380	25790	27730	36270	31930	31340	31420	36390	38950	37300
MAX	41200	49900	49700	27300	38100	41900	37400	34700	44000	41700	40900	38300
MIN	33900	38800	26800	23300	24100	32500	27000	28800	23700	30500	37700	36100
AC-FT	2370000	2662000	2114000	1586000	1540000	2230000	1900000	1927000	1870000	2238000	2395000	2219000

CAL YR 1982 TOTAL 10951400 MEAN 30000 MAX 49900 MIN 10000 AC-FT 21720000
WTR YR 1983 TOTAL 12630000 MEAN 34600 MAX 49900 MIN 23300 AC-FT 25050000

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year. Daily sediment loads October 1954 to September 1971 in reports of Corps of Engineers. Samples for particle-size distribution were collected from boat cross-section 0.2 mile downstream from gage.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1972 to September 1976, November 1977 to September 1981.
WATER TEMPERATURES: October 1971 to September 1976, November 1977 to September 1981.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos June 17, 19, 1981; minimum daily, 410 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 28.0°C July 30, 1976 and Aug. 7, 1979; minimum daily, 0.0°C on many days during the winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,620 mg/L Nov. 20, 1972; minimum daily mean, 42 mg/L Dec. 29, 1975.
SEDIMENT LOADS: Maximum daily, 222,000 tons Nov. 20, 1972; minimum daily, 2,970 tons Dec. 29, 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATUR-ATION (PER-CENT) (00301)	BARO-METRIC PRES-SURE (MM HG) (00025)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, KF AGAR (COLS./100 ML) (31673)	HARD-NESS (MG/L AS CaCO3) (00900)
NOV , 1982												
15...	1500	41700	750	8.6	2.0	27	11.6	84	--	640	1000	270
JAN , 1983												
04...	1130	28500	780	8.5	.0	6.3	13.8	97	--	<10	400	250
MAR												
14...	1500	34400	750	8.2	4.5	72	11.7	94	--	100	800	290
APR												
25...	1420	31200	790	8.1	10.0	38	11.1	--	--	45	230	350
JUN												
27...	1400	28500	750	8.1	24.5	70	7.1	90	727	460	980	300
AUG												
15...	1500	38400	850	8.5	27.0	16	6.4	84	731	10	100	260
DATE	HARD-NESS, NONCAR-BONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB AS CaCO3 (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)
NOV , 1982												
15...	103	65	25	62	33	1.7	5.6	163	210	13	.50	8.4
JAN , 1983												
04...	85	61	23	71	38	2.0	5.5	162	230	11	.50	7.4
MAR												
14...	120	70	28	47	25	1.2	7.2	171 ²	210	12	.40	12
APR												
25...	159	84	34	47	22	1.1	7.1	192	230	11	.30	8.6
JUN												
27...	126	75	28	42	23	1.1	7.1	178	210	12	.40	13
AUG												
15...	106	67	23	78	39	2.2	6.1	156	250	14	.50	7.1
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)
NOV , 1982												
15...	505	488	.69	56900	.88	<.060	1.30	.040	.49	.040	.160	--
JAN , 1983												
04...	516	507	.70	39700	.20	.140	.90	.020	.28	.070	.090	--
MAR												
14...	515	490	.70	47800	1.3	.180	1.60	.060	1.1	.070	.350	391
APR												
25...	697	538	.95	58700	1.6	.050	1.70	.050	.55	.070	.180	353
JUN												
27...	496	495	.67	38200	1.9	.120	--	.100	--	--	--	272
AUG												
15...	544	539	.74	56400	<.10	.020	1.00	.040	.28	.050	.090	291

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SEDI-MENT, DIS-CHARGE, SUS-PENDED THAN (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER (70331)	ARSENIC DIS-SOLVED (UG/L) (AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L) (AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L) (AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L) (AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L) (AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L) (AS CR) (01030)	COBALT, DIS-SOLVED (UG/L) (AS CO) (01035)	COPPER, DIS-SOLVED (UG/L) (AS CU) (01040)	IRON, DIS-SOLVED (UG/L) (AS FE) (01046)
NOV , 1982											
15...	--	--	2	<10	55	1	<1	<1	<3	7	14
JAN , 1983											
04...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	36300	64	2	10	63	<1	<1	<1	<3	5	6
APR											
25...	29700	39	3	30	150	<1	10	<1	<3	7	10
JUN											
27...	20900	90	4	30	97	<1	<1	<1	<3	6	19
AUG											
15...	30200	20	--	--	--	--	--	--	--	--	--

DATE	LEAD, DIS-SOLVED (UG/L) (AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L) (AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L) (AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L) (AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L) (AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L) (AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L) (AS SE) (01145)	SILVER, DIS-SOLVED (UG/L) (AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L) (AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L) (AS V) (01085)	ZINC, DIS-SOLVED (UG/L) (AS ZN) (01090)
NOV , 1982											
15...	4	54	12	.1	<10	2	2	<1	530	<6.0	46
JAN , 1983											
04...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	11	48	28	<.1	<10	5	2	<1	500	<6.0	<3
APR											
25...	1	50	10	<.1	<10	2	3	1	530	<6.0	9
JUN											
27...	2	40	5	<.1	<10	2	2	<1	500	<6.0	9
AUG											
15...	--	--	--	--	--	--	--	--	--	--	--

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOC-ATION, TOTAL (FEET) (81903)	SAM-PLING DEPTH (FEET) (00003)	STREAM VELOC-ITY, (FPS) (81904)	SEDI-MENT, SUS-PENDED THAN (MG/L) (80154)	SED. SUSP. FALL DIAM. X FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. X FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. X FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. X FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. X FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. X FINER THAN 1.00 MM (70346)
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OCT	14...	WATER TEMPERATURE, 12°C (1225-1325 HOURS); DISCHARGE, 41,200 ft³/s.											
	14...	1225	465	23.8	5.50	5.06	116	--	55	69	96	100	--
	14...	1226	465	--	11.9	4.83	171	--	43	57	97	100	--
	14...	1227	465	--	17.0	4.37	133	--	56	67	96	100	--
	14...	1228	465	--	19.8	4.15	376	--	23	34	90	100	--
	14...	1229	465	--	21.4	3.87	451	--	19	32	87	100	--
	14...	1230	465	--	22.4	3.63	387	--	21	34	90	100	--
	14...	1231	465	--	22.9	3.18	596	--	16	27	82	100	--
	14...	1235	380	21.0	4.90	5.02	195	--	42	59	97	100	--
	14...	1236	380	--	10.5	4.50	301	--	25	39	90	100	--
	14...	1237	380	--	15.0	4.11	399	--	19	33	91	100	--
	14...	1238	380	--	17.5	3.50	463	--	19	31	82	100	--
	14...	1239	380	--	18.9	3.35	469	--	17	31	92	100	--
	14...	1240	380	--	19.8	3.37	626	--	10	22	86	100	--
	14...	1245	315	18.8	4.30	4.74	268	--	36	46	95	100	--
	14...	1246	315	--	9.40	4.67	414	--	28	42	92	100	--
	14...	1247	315	--	13.4	4.13	770	--	15	23	71	100	--
	14...	1248	315	--	15.7	2.55	1760	--	5	11	46	99	100
	14...	1249	315	--	16.9	1.33	--	--	--	--	--	--	--
	14...	1250	315	--	17.7	1.15	--	--	--	--	--	--	--
	14...	1255	190	15.8	--	--	683	17	31	--	--	--	--
	14...	1310	110	14.4	3.30	4.44	416	--	74	79	97	100	--
	14...	1311	110	--	7.20	4.22	380	--	79	85	99	100	--
	14...	1312	110	--	10.3	3.85	494	--	70	73	97	100	--
	14...	1313	110	--	12.0	3.96	502	--	67	71	97	100	--
	14...	1314	110	--	13.0	3.50	554	--	58	64	92	100	--
	14...	1315	110	--	13.6	3.39	538	--	61	66	94	100	--
MAY	26...	WATER TEMPERATURE, 16.0°C (1325-1415 HOURS); DISCHARGE, 32,200 ft³/s.											
	26...	1325	450	15.0	3.50	5.56	172	--	48	64	96	100	--
	26...	1326	450	--	7.50	4.70	212	--	35	53	96	100	--
	26...	1327	450	--	10.7	4.59	206	--	35	48	93	100	--
	26...	1328	450	--	12.5	4.59	290	--	29	44	92	100	--
	26...	1329	450	--	13.5	4.26	324	--	23	37	75	100	--
	26...	1330	450	--	14.1	4.15	278	--	28	45	85	100	--
	26...	1331	375	16.2	3.70	5.13	151	--	43	62	98	100	--
	26...	1332	375	--	8.10	4.91	247	--	36	54	97	100	--
	26...	1334	375	--	11.6	3.83	305	--	20	41	93	100	--
	26...	1336	375	--	13.5	3.94	268	--	27	48	89	100	--
	26...	1338	375	--	14.6	3.72	394	--	22	42	84	100	--
	26...	1340	375	--	15.2	3.72	400	--	19	39	87	100	--
	26...	1345	275	15.6	--	--	276	11	16	--	--	--	--

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET) (81903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (81904)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN (70338)	SED. SUSP. FALL DIAM. % FINER THAN (70342)	SED. SUSP. FALL DIAM. % FINER THAN (70343)	SED. SUSP. FALL DIAM. % FINER THAN (70344)	SED. SUSP. FALL DIAM. % FINER THAN (70345)
							.004 MM	.062 MM	.125 MM	.250 MM	.500 MM
MAY											
26...	1350	175	16.8	3.90	4.04	176	--	52	74	100	--
26...	1351	175	--	8.40	3.61	197	--	49	68	100	--
26...	1352	175	--	12.0	3.39	222	--	48	63	100	--
26...	1354	175	--	14.0	2.06	309	--	34	52	97	100
26...	1355	175	--	15.1	2.35	343	--	34	50	98	100
26...	1356	175	--	15.8	2.63	381	--	29	49	96	100
26...	1400	100	19.0	4.40	3.50	178	--	81	97	100	--
26...	1401	100	--	9.50	3.28	185	--	78	91	100	--
26...	1402	100	--	13.6	2.96	230	--	72	87	100	--
26...	1403	100	--	15.8	2.85	211	--	68	85	100	--
26...	1404	100	--	17.1	2.63	229	--	67	84	100	--
26...	1405	100	--	17.9	2.31	253	--	59	73	100	--
AUG											
04...	WATER TEMPERATURE, 27°C (1120-1220 HOURS); DISCHARGE, 40,800 ft ³ /s.										
04...	1120	470	20.2	4.70	5.80	226	--	73	82	97	100
04...	1121	470	--	10.1	5.28	203	--	54	66	97	100
04...	1122	470	--	14.4	4.70	251	--	44	57	93	100
04...	1123	470	--	16.8	4.26	290	--	41	51	94	100
04...	1124	470	--	18.2	4.15	387	--	31	45	83	100
04...	1125	470	--	19.0	4.15	612	--	21	31	77	100
04...	1128	400	24.0	5.50	5.78	194	--	58	72	97	100
04...	1130	400	--	12.0	4.80	328	--	38	55	98	100
04...	1132	400	--	17.1	3.36	470	--	20	39	93	100
04...	1134	400	--	20.0	3.07	622	--	16	30	84	100
04...	1136	400	--	21.6	3.07	903	--	12	26	85	100
04...	1137	400	--	22.6	2.53	838	--	14	27	91	100
04...	1138	400	--	23.1	2.40	995	--	12	22	87	100
04...	1140	325	20.8	--	--	1050	3	7	--	--	--
04...	1151	225	16.0	3.70	4.63	254	--	48	66	100	--
04...	1152	225	--	8.00	3.98	234	--	51	71	98	100
04...	1153	225	--	11.4	3.55	179	--	71	78	98	100
04...	1154	225	--	13.3	2.96	491	--	26	50	96	100
04...	1156	225	--	14.4	2.98	411	--	29	46	94	100
04...	1158	225	--	15.1	2.85	449	--	28	46	94	100
04...	1159	75.0	13.8	3.20	3.68	192	--	81	90	100	--
04...	1200	75.0	--	6.90	3.55	187	--	72	88	100	--
04...	1201	75.0	--	9.90	3.18	190	--	63	76	100	--
04...	1202	75.0	--	11.5	3.18	219	--	58	70	98	100
04...	1204	75.0	--	12.4	2.48	242	--	46	62	97	100
04...	1206	75.0	--	13.0	2.81	295	--	45	59	98	100
SEP											
08...	WATER TEMPERATURE, 23°C (1240-1415 HOURS); DISCHARGE, 37,000 ft ³ /s.										
08...	1240	495	23.0	5.30	5.56	102	--	63	85	100	--
SEP											
08...	1241	495	--	11.5	5.13	165	--	45	57	92	100
08...	1242	495	--	16.4	4.37	254	--	33	46	85	100
08...	1243	495	--	19.2	3.72	419	--	20	29	66	100
08...	1244	495	--	20.7	3.94	551	--	14	23	56	99
08...	1245	495	--	21.6	2.85	438	--	16	24	61	99
08...	1246	495	--	22.2	2.31	909	--	9	14	58	99
08...	1250	420	22.4	5.20	5.67	184	--	48	64	100	--
08...	1251	420	--	11.2	4.91	259	--	27	44	96	100
08...	1252	420	--	16.0	4.26	461	--	21	36	96	100
08...	1253	420	--	18.7	3.61	647	--	14	26	90	100
08...	1254	420	--	20.2	2.63	1320	--	6	14	89	100
08...	1255	420	--	21.1	1.98	2250	--	4	8	61	98
08...	1256	420	--	21.6	1.65	756	--	15	21	51	98
08...	1315	350	19.4	--	--	503	6	10	--	--	--
08...	1325	245	15.2	3.50	4.48	144	--	37	58	95	100
08...	1326	245	--	7.60	3.94	247	--	33	47	92	100
08...	1327	245	--	10.9	3.72	366	--	26	39	93	100
08...	1328	245	--	12.7	3.61	338	--	19	32	93	100
08...	1329	245	--	13.7	3.72	438	--	18	31	90	100
08...	1330	245	--	14.3	3.39	536	--	14	25	84	100
08...	1335	100	12.8	3.00	3.61	86	--	75	94	100	--
08...	1336	100	--	6.40	3.39	118	--	71	89	100	--
08...	1337	100	--	9.10	2.96	144	--	59	75	100	--
08...	1338	100	--	10.7	2.53	164	--	49	63	95	100
08...	1339	100	--	11.5	2.31	204	--	35	45	90	100
08...	1340	100	--	12.0	2.09	340	--	24	33	76	100

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY,--Continued

WATER-QUALITY RECORDS

PARTICLE SIZE DISTRIBUTION OF BED MATERIAL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	NUMBER OF SAM- PLING POINTS (00063)	BED	BED	BED	BED	BED	BED	BED	BED	BED
			MAT. SIEVE DIAM. % FINER THAN (80164)	MAT. SIEVE DIAM. % FINER THAN (80165)	MAT. SIEVE DIAM. % FINER THAN (80166)	MAT. SIEVE DIAM. % FINER THAN (80167)	MAT. SIEVE DIAM. % FINER THAN (80168)	MAT. SIEVE DIAM. % FINER THAN (80169)	MAT. SIEVE DIAM. % FINER THAN (80170)	MAT. SIEVE DIAM. % FINER THAN (80171)	MAT. SIEVE DIAM. % FINER THAN (80172)
OCT 14...	1325	5	--	0	14	74	94	98	99	100	--
MAY 26...	1415	5	0	1	14	74	92	97	99	100	--
AUG 04...	1216	5	0	1	26	90	98	99	99	99	100
SEP 08...	1415	5	--	0	12	91	98	99	100	--	--

06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA

LOCATION.--Lat 42°32'08", long 96°24'39", Woodbury County, Hydrologic Unit 10230001, on left bank at downstream side of bridge on 38th Street in Sioux City, 1.9 mi downstream from West Branch, and 3.6 mi upstream from mouth.

DRAINAGE AREA.--65.1 mi².

PERIOD OF RECORD.--October 1945 to September 1969, June 1981 to current year.

REVISED RECORDS.--WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,112.04 ft NGVD (city of Sioux City benchmark). Prior to May 20, 1954, nonrecording gage with supplementary water-stage recorder in operation above 5.0 ft gage height and May 20, 1954 to Sept. 30, 1969, water-stage recorder at present site at datum 5.0 ft higher.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years (water years 1946-69, 1982-83), 15.1 ft³/s, 3.15 in/yr, 10,940 acre-ft/yr; median of yearly mean discharges, 11 ft³/s, 2.3 in/yr, 7,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,780 ft³/s Sept. 10, 1949, gage height, 26.80 ft, present datum, from rating curve extended above 1,700 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1946, 1958-60.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 7, 1944, reached a stage of about 30.5 ft, from floodmarks, present datum, discharge, 9,600 ft³/s, on basis of contracted-opening measurement of peak flow by Corps of Engineers.

EXTREMES FOR CURRENT PERIOD.--Peak discharges above base of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 20	1400	*1,870	*13.87	July 23	0115	1,090	11.35
June 27	1915	1,540	12.88				

Minimum daily discharge 1.1 ft/s Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	11	4.6	7.5	6.0	4.0	56	94	71	16	41	19	7.2		
2	7.6	4.6	8.2	5.5	4.0	49	53	117	18	33	18	6.5		
3	2.5	4.6	7.3	6.0	4.5	49	47	107	17	29	18	6.8		
4	1.4	4.6	6.3	6.0	5.0	54	42	51	16	28	17	6.5		
5	1.1	4.6	6.4	6.0	5.0	64	37	41	15	26	14	6.9		
6	1.4	4.8	6.2	6.0	5.0	101	40	53	15	26	13	7.2		
7	2.1	5.0	6.1	5.5	5.0	92	42	57	15	24	13	6.6		
8	59	4.7	4.5	5.5	5.0	37	35	39	14	22	12	6.8		
9	39	5.5	3.5	5.5	5.0	38	36	35	14	22	11	6.5		
10	8.2	8.8	4.0	5.5	5.0	41	44	32	15	22	10	6.4		
11	6.3	10	4.5	5.0	5.0	30	35	30	14	21	10	6.8		
12	5.7	12	4.5	5.0	5.0	30	95	32	14	21	9.9	7.3		
13	5.4	8.2	4.5	5.0	5.0	31	303	30	119	21	9.5	7.1		
14	5.2	7.8	4.5	5.0	5.5	29	58	28	88	20	9.1	7.7		
15	5.1	7.4	4.5	5.0	6.0	34	91	23	39	20	8.4	9.2		
16	5.2	7.7	4.5	4.0	6.0	35	120	21	25	20	8.0	8.3		
17	5.2	7.4	3.5	4.5	7.0	30	65	23	31	20	7.3	7.7		
18	5.2	8.1	4.0	4.5	7.0	28	54	50	144	23	7.5	7.5		
19	15	9.1	4.0	4.5	8.0	28	50	45	32	21	6.7	7.9		
20	12	9.3	4.5	4.5	8.0	25	46	34	668	20	6.7	8.0		
21	6.7	7.3	4.5	5.0	9.0	24	42	30	94	18	7.0	7.7		
22	7.1	7.0	4.5	5.0	9.0	25	40	24	44	27	6.9	8.0		
23	8.0	5.7	4.5	5.0	10	24	35	20	37	211	7.6	8.1		
24	7.0	5.0	6.0	5.0	10	25	32	20	33	22	7.9	8.7		
25	5.9	4.0	10	5.0	12	28	29	19	28	20	8.3	8.6		
26	5.6	4.5	8.0	5.0	15	26	27	18	26	19	8.2	8.5		
27	5.2	5.2	6.0	5.0	32	28	25	18	350	21	8.2	8.7		
28	5.1	6.8	6.0	6.0	86	24	26	17	204	20	7.6	11		
29	5.3	7.0	5.0	5.5	---	28	26	18	68	19	7.3	14		
30	4.9	7.3	4.0	5.0	---	35	25	17	54	20	7.8	9.4		
31	4.7	---	4.5	4.5	---	102	---	17	---	20	7.2	---		
TOTAL	269.1	198.6	166.0	160.5	293.0	1250	1694	1137	2307	897	312.1	237.6		
MEAN	8.68	6.62	5.35	5.18	10.5	40.3	56.5	36.7	76.9	28.9	10.1	7.92		
MAX	59	12	10	6.0	86	102	303	117	668	211	19	14		
MIN	1.1	4.0	3.5	4.0	4.0	24	25	17	14	18	6.7	6.4		
CFSM	.13	.10	.08	.08	.16	.62	.87	.56	1.18	.44	.16	.12		
IN.	.15	.11	.09	.09	.17	.71	.97	.65	1.32	.51	.18	.14		
AC-FT	534	394	329	318	581	2480	3360	2260	4580	1780	619	471		
CAL YR 1982	TOTAL	2711.72	MEAN	7.43	MAX	451	MIN	.20	CFSM	.11	IN	1.55	AC-FT	5380
WTR YR 1983	TOTAL	8921.90	MEAN	24.4	MAX	668	MIN	1.1	CFSM	.38	IN	5.10	AC-FT	17700

FLOYD RIVER BASIN

06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE1/4 NE1/4 sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank 270 ft. from South County Road at east edge of Alton, 34.3 mi upstream from West Branch Floyd River, and at mile 58.1.

DRAINAGE AREA.--268 mi².

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 60.5 ft³/s, 3.07 in/yr, 43,830 acre-ft/yr; median of yearly mean discharges, 52 ft³/s, 2.6 in/yr, 37,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft³/s June 20, 1983, gage height 18.54 ft, from floodmark, from rating curve extended above 8,500 ft³/s; no flow at times in 1956, 1958-59, 1965, 1968, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft³/s, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 1	1630	2,060	15.26	June 15	0845	987	10.85
Mar. 7	1600	2,110	15.32	June 20	unknown	*16,300	a*18.54
Apr. 4	----	900	-----	June 28	----	2,630	-----
Apr. 13	1845	2,880	16.08	July 1	----	2,750	-----
May 3	0730	1,360	13.68				

a from floodmark

Minimum daily discharge, 42 ft³/s Sept. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	160	145	80	70	1510	540	337	198	2210	146	57
2	164	154	155	100	70	1160	870	879	197	1040	138	58
3	223	150	163	120	70	1010	870	1230	198	684	127	61
4	194	143	157	130	70	905	860	802	191	712	116	51
5	152	140	152	130	70	952	778	511	183	530	110	50
6	131	136	146	120	60	1310	723	432	181	446	104	85
7	118	136	137	120	60	2000	791	507	179	402	97	75
8	151	131	120	120	60	1080	694	451	178	366	90	61
9	342	137	90	110	60	522	643	370	175	335	85	58
10	381	224	100	110	60	466	719	336	175	311	79	58
11	277	345	100	110	65	460	733	307	176	289	74	50
12	219	453	110	100	65	409	821	296	176	264	71	48
13	190	418	110	100	70	442	2070	306	208	247	69	47
14	171	315	127	100	70	447	1750	282	761	235	69	47
15	158	251	120	100	75	442	913	260	903	224	64	53
16	145	228	100	90	75	431	932	251	526	216	61	56
17	137	211	100	90	80	418	742	245	416	206	59	53
18	132	204	116	90	80	397	660	275	515	234	57	51
19	138	213	112	90	90	376	610	370	577	254	54	49
20	200	236	107	90	100	357	536	370	5700	217	54	46
21	284	224	105	80	110	327	476	326	6000	198	51	44
22	337	203	109	80	120	307	447	302	1730	184	49	45
23	339	160	117	80	140	285	395	272	805	200	46	44
24	295	140	110	80	160	274	354	252	643	202	46	43
25	251	150	150	80	200	280	331	239	648	185	62	44
26	223	160	170	80	250	240	311	226	480	173	64	42
27	206	160	190	80	450	127	291	216	1200	165	57	42
28	195	152	265	80	904	199	279	212	2360	200	60	44
29	184	153	136	70	---	187	275	208	1630	210	55	50
30	173	146	87	70	---	460	268	204	1520	171	52	53
31	165	---	60	70	---	530	---	200	---	160	56	---
TOTAL	6343	6033	3966	2950	3754	18270	20682	11474	20728	11470	2322	1565
MEAN	205	201	128	95.2	134	589	689	370	958	370	74.9	52.2
MAX	381	453	265	130	904	2000	2070	1230	6000	2210	146	85
MIN	68	131	60	70	60	127	268	200	175	160	46	42
CFSM	.77	.75	.48	.36	.50	2.20	2.57	1.38	3.58	1.38	.28	.20
IN.	.88	.84	.55	.41	.52	2.54	2.87	1.59	3.99	1.59	.32	.22
AC-FT ^a	12580	11970	7870	5850	7450	36240	41020	22760	56980	22750	4610	3100

CAL YR 1982	TOTAL	41269.55	MEAN	113	MAX	1750	MIN	.20	CFSM	.42	IN	5.73	AC-FT	81860
WTR YR 1983	TOTAL	117557.00	MEAN	322	MAX	6000	MIN	42	CFSM	1.20	IN	16.32	AC-FT	233200

FLOYD RIVER BASIN

06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION.--Lat 42°55'25", long 96°10'34", in NE1/4 NE1/4 sec. 32, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, on left bank near wingwall at downstream side of bridge on county highway B62, 0.1 mi west of U.S. Highway 76, 0.8 mi downstream from Orange City slough, 2.2 mi northeast of Struble, 21.4 mi upstream from Floyd River, and at mile 45.2. above mouth of Floyd River.

DRAINAGE AREA.--180 mi².

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area, 1978-81 (P).

GAGE.--Water-stage recorder. Datum of gage is 1,239.40 ft NGVD (State Highway Commission bench mark). Prior to Jan. 5, 1978, at site 721 ft right at old channel at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 38.7 ft³/s, 2.92 in/yr, 28,040 acre-ft/yr; median of yearly mean discharges, 31 ft³/yr, 2.3 in/yr, 22,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,060 ft³/s Mar. 28, 1962, gage height, 15.63 ft; maximum gage height, 15.86 ft June 20, 1983; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 28	2115	2,080	12.41	June 14	0600	744	8.77
Mar. 7	0045	1,990	12.13	June 18	0315	494	7.64
Apr. 11	0400	1,210	10.53	June 20	1900	*7,590	*15.86
Apr. 13	0545	2,600	13.05	June 27	2200	4,140	14.53
Apr. 16	0015	1,080	9.69	July 1	0730	1,090	10.12
May 3	0015	1,330	10.56	July 29	0030	685	8.45
May 7	1615	586	8.08				

Minimum daily discharge, 21 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	21	71	70	50	40	1930	1100	391	127	818	134	58		
2	46	69	77	70	40	1640	670	1040	125	539	125	57		
3	56	65	77	70	40	909	455	971	124	378	117	56		
4	45	60	69	70	40	666	380	431	117	334	108	55		
5	36	58	67	65	45	765	335	343	111	283	102	55		
6	29	57	63	65	45	1360	355	306	108	260	97	85		
7	26	57	59	65	45	1700	381	469	106	237	93	67		
8	28	54	45	60	45	434	322	327	103	218	87	60		
9	78	59	35	60	45	267	319	262	102	203	83	58		
10	103	119	30	60	45	256	402	234	103	195	78	55		
11	73	142	40	55	50	255	337	216	102	184	74	54		
12	62	194	60	55	50	242	697	210	98	173	72	53		
13	55	161	60	55	55	267	2230	207	185	167	72	52		
14	51	134	55	55	55	264	801	190	657	157	67	50		
15	47	120	55	55	60	248	706	180	359	149	62	55		
16	43	109	55	50	60	241	889	174	229	140	60	54		
17	42	102	50	50	65	234	701	169	230	136	58	53		
18	40	101	50	50	65	226	589	230	408	217	57	51		
19	43	110	50	50	70	214	566	270	310	181	55	49		
20	56	118	45	50	80	205	506	222	3910	148	54	49		
21	90	106	45	45	100	194	430	203	3080	132	53	48		
22	113	90	45	45	130	181	389	188	601	127	53	47		
23	148	70	40	45	160	172	354	171	372	197	52	46		
24	154	60	40	45	200	172	321	164	300	182	49	47		
25	132	65	100	45	250	187	308	156	260	150	60	46		
26	115	65	150	45	300	112	290	152	329	136	67	44		
27	104	65	120	45	500	65	268	150	2270	131	51	44		
28	93	70	200	45	1780	148	260	144	3100	190	51	44		
29	86	73	140	45	---	215	256	137	1480	296	48	44		
30	79	70	80	40	---	234	250	131	668	161	54	44		
31	73	---	40	40	---	608	---	131	---	147	60	---		
TOTAL	2166	2694	2112	1645	4460	14611	15867	8569	20074	6966	2243	1580		
MEAN	69.9	89.8	68.1	53.1	159	471	529	276	669	225	72.4	52.7		
MAX	154	194	200	70	1780	1930	2230	1040	3910	818	134	85		
MIN	21	54	30	40	40	65	250	131	98	127	48	44		
CFSM	.39	.50	.38	.30	.88	2.62	2.94	1.53	3.72	1.25	.40	.29		
IN.	.46	.56	.44	.34	.92	3.02	3.28	1.77	4.15	1.44	.46	.33		
AC-FT	4300	6340	4190	3260	8850	28980	31470	17000	39820	13820	4450	3130		
CAL YR 1982	TOTAL	18567.0	MEAN	50.9	MAX	2100	MIN	1.0	CFSM	.28	IN	3.84	AC-FT	36830
WTR YR 1983	TOTAL	82987.0	MEAN	227	MAX	3910	MIN	21	CFSM	1.26	IN	17.15	AC-FT	164600

FLOYD RIVER BASIN

06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 95°18'43", in SE1/4 SE1/4 sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on right bank at downstream side of bridge on county highway C70, 0.2 mi east of James, 14.3 mi downstream from West Branch Floyd River, and at mile 9.5.

DRAINAGE AREA.--886 mi².

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft NGVD. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--48 years (water years 1936-83), 197 ft³/s, 3.02 in/yr, 142,700 acre-ft/yr; median of yearly discharges, 150 ft³/s, 2.3 in/yr, 109,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft³/s June 8, 1953, gage height, 25.3 ft, from floodmarks, datum then in use, from rating curve extended above 16,000 ft³/s on basis of contracted-opening and flow-over-embankment measurement of peak flow; minimum daily, 0.90 ft³/s Jan. 10-22, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 2	2330	4,440	18.14	May 3	2200	4,500	18.25
Mar. 7	2300	5,260	19.15	June 21	unknown	*18,000	a*28.85
Apr. 1	1800	3,480	16.87	June 28	unknown	11,800	a24.69
Apr. 14	1000	6,120	20.14	July 2	0930	5,070	b18.30

a From floodmark.

b Observed.

Minimum daily discharge, 134 ft³/s Feb. 6-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	372	371	160	140	3260	3190	796	704	3470	571	224
2	257	360	372	200	140	3840	3390	2310	696	4120	534	217
3	351	344	382	250	140	3790	3130	4110	692	2300	516	204
4	390	320	381	300	140	3020	2510	3480	666	2170	475	195
5	357	295	362	300	140	2720	2090	2150	637	2000	441	192
6	300	296	353	250	134	3290	1920	1730	624	1680	422	202
7	270	292	336	250	134	4840	1990	1810	608	1490	406	273
8	265	288	309	250	134	4300	1880	1890	597	1350	389	263
9	390	288	203	220	134	2100	1690	1470	590	1240	369	229
10	632	343	150	220	134	1300	1930	1250	585	1150	351	207
11	617	520	180	220	140	1430	1920	1130	572	1060	336	190
12	502	783	250	200	140	1330	1960	1080	574	973	311	183
13	431	868	350	200	160	1340	4390	1050	639	926	280	179
14	384	793	400	200	160	1360	5640	1020	1730	871	300	177
15	356	646	400	200	180	1360	4050	944	2090	822	297	192
16	321	592	350	180	180	1390	3600	906	1740	770	294	209
17	302	559	350	180	200	1330	2930	890	1390	737	278	207
18	290	512	350	180	200	1260	2300	1050	2000	745	268	204
19	299	509	320	180	220	1200	2010	1380	1870	945	255	204
20	355	530	320	160	250	1130	1800	1370	3910	827	245	200
21	436	544	320	160	300	1060	1570	1210	11900	720	245	192
22	587	505	300	160	350	985	1400	1080	10000	668	237	188
23	685	420	300	160	400	934	1250	987	3870	729	232	186
24	706	300	300	160	450	900	1120	917	2330	779	227	186
25	642	320	450	140	500	923	1020	849	1960	729	229	181
26	566	320	400	140	700	892	959	827	1730	652	263	181
27	511	340	500	140	1000	534	880	798	5470	617	265	179
28	474	374	500	140	2000	495	818	777	9870	605	247	177
29	443	408	300	140	---	835	788	755	8020	844	242	222
30	419	404	200	140	---	1000	771	728	4750	745	234	212
31	393	---	140	140	---	1490	---	719	---	617	229	---
TOTAL	13096	13445	10199	5920	8900	55638	64896	41463	82814	37351	9988	6055
MEAN	422	448	329	191	318	1795	2163	1338	2760	1205	322	202
MAX	706	868	500	300	2000	4840	5640	4110	11900	4120	571	273
MIN	165	288	140	140	134	495	771	719	572	605	227	177
CFSM	.48	.51	.37	.22	.36	2.03	2.44	1.51	3.12	1.36	.36	.23
IN.	.55	.56	.43	.25	.37	2.34	2.72	1.74	3.48	1.57	.42	.25
AC-FT	25980	26670	20230	11740	17650	110400	128700	82240	164300	74090	19810	12010

CAL YR 1982	TOTAL	105557.0	MEAN	289	MAX	3730	MIN	9.0	CFSM	.33	IN	4.43	AC-FT	209400
WTR YR 1983	TOTAL	349765.0	MEAN	958	MAX	11900	MIN	134	CFSM	1.08	IN	14.69	AC-FT	693800

MONONA-HARRISON DITCH BASIN

06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in SW1/4 sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi east of Hornick, 9.2 mi upstream from Wolf Creek, and 13.5 mi north of Onawa.

DRAINAGE AREA.--403 mi².

PERIOD OF RECORD.--April 1939 to September 1969 (published as "at Holly Springs"), July 1974 to current year.

REVISED RECORDS.--WSP 1240: 1943, 1946 (M). WSP 1310: 1941 (M) 1944-46 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft NGVD. Prior to June 16, 1969, nonrecording gage at site 3.0 mi upstream and June 16, 1959 to Sept. 30, 1969, recording gage at site 2.2 mi upstream at datum 7.0 ft higher.

REMARKS.--Records good except those for winter period, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs 5.5 mi south, thence southeast 6.5 mi to a point 1.2 mi west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels the Little Sioux River and becomes known as Monona-Harrison ditch. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--39 years (water years 1940-69, 1975-83), 98.8 ft³/s, 3.33 in/yr, 71,580 acre-ft/yr; median of yearly mean discharges 84 ft³/s, 2.8 in/yr, 60,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s Mar. 28, 1962, gage height, 22.46 ft, site and datum then in use; maximum gage height, 25.2 ft Mar. 30, 1960, from floodmark, site and datum then in use; minimum daily discharge, 0.2 ft³/s July 30, Aug. 17, 1956.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 28	2300	2,520	16.05	May 3	1200	2,470	15.95
Mar. 7	1046	2,230	15.42	June 18	1530	2,170	15.28
Apr. 1	0930	1,940	14.68	June 21	1300	*4,160	*18.58
Apr. 13	1430	2,700	16.42	June 28	1645	2,760	16.51

Minimum daily discharge, 45 ft³/s Jan. 28 to Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124	78	113	50	45	1790	1650	411	328	553	182	87
2	370	75	107	60	45	1190	1330	1540	319	604	174	84
3	284	72	107	80	45	1040	1030	2150	320	484	171	80
4	179	68	97	80	45	821	805	1120	301	441	167	77
5	110	63	89	76	45	852	683	720	271	379	161	77
6	90	66	83	76	45	1230	656	659	267	356	158	82
7	78	63	83	76	45	1960	721	745	264	357	149	85
8	74	62	70	72	45	842	631	686	258	339	144	78
9	95	63	60	72	45	464	613	525	249	322	137	75
10	98	75	50	70	45	412	808	471	248	318	130	72
11	89	144	60	70	46	389	763	435	240	302	127	71
12	75	252	80	68	48	364	801	421	248	295	122	69
13	72	246	80	62	50	376	2300	428	476	314	117	69
14	67	174	74	57	50	379	1140	406	1400	260	117	70
15	63	152	74	54	50	428	731	375	725	247	115	78
16	60	141	70	62	54	620	1190	364	447	239	113	75
17	57	137	70	59	58	598	961	355	442	232	109	75
18	53	119	75	54	62	491	784	513	1520	227	105	71
19	54	125	75	57	70	445	686	864	1040	284	99	70
20	106	134	75	58	120	409	630	617	1430	234	95	76
21	168	132	75	56	250	367	577	518	3640	211	98	74
22	167	117	75	54	350	351	533	469	1110	197	102	71
23	162	105	75	52	445	327	491	429	670	343	104	70
24	143	90	75	52	473	326	440	388	567	343	105	70
25	125	80	100	52	380	350	414	373	505	259	105	71
26	112	100	150	52	303	342	392	354	480	234	104	70
27	102	100	100	48	473	171	362	362	935	220	107	70
28	97	110	110	45	1730	221	347	345	2430	215	100	68
29	94	110	140	45	---	374	344	389	1250	212	87	73
30	88	122	100	45	---	483	334	353	686	205	85	79
31	83	---	80	45	---	760	---	339	---	192	91	---
TOTAL	3539	3376	2672	1859	5462	19172	23147	18126	23066	9418	3780	2237
MEAN	114	113	86.2	60.0	195	618	772	585	769	304	122	74.6
MAX	370	252	150	80	1730	1960	2300	2150	3640	604	182	87
MIN	53	62	50	45	45	171	334	339	240	192	85	68
CFSM	.28	.28	.21	.15	.48	1.53	1.92	1.45	1.91	.75	.30	.19
IN.	.33	.31	.25	.17	.50	1.77	2.14	1.67	2.13	.87	.35	.21
AC-FT	7020	6700	5300	3690	10830	38030	45910	35950	45750	18680	7500	4440

CAL YR 1982	TOTAL	38258.5	MEAN 105	MAX 3730	MIN 5.0	CFSM .26	IN 3.53	AC-FT 75890
WTR YR 1983	TOTAL	115854.0	MEAN 317	MAX 3640	MIN 45	CFSM .79	IN 10.69	AC-FT 229800

MONONA-HARRISON DITCH BASIN

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 NE1/4 sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left pier at downstream side of bridge on county highway E54, 1.0 mi west of gaging station on Little Sioux River near Turin, 4 mi southwest of Turin, 5.2 mi northeast of Blencoe, and 12.5 mi upstream from mouth.

DRAINAGE AREA.--900 mi².

PERIOD OF RECORD.--April 1939 to current year. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi upstream. Prior to May 1942, published as "near Blencoe".

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft NGVD (Corps of Engineers bench mark). Prior to May 7, 1942, nonrecording gage at site 4.8 mi downstream at datum 5.40 ft lower. May 7, 1942 to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi upstream from the mouth of the Little Sioux River. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--25 years (water years 1959-83), 219 ft³/s, 3.30 in/yr, 158,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft³/s Feb. 19, 1971, gage height, 23.03 ft, datum then in use; minimum daily, 8.5 ft³/s Jan. 3-11, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 1	0630	3,420	15.76	June 14	1115	4,750	17.94
Mar. 7	1100	4,950	18.23	June 18	2115	3,830	16.55
Apr. 1	1330	3,350	15.63	June 21	1700	*5,120	*18.47
Apr. 13	2045	4,570	17.68	June 28	2130	3,340	15.62
May 3	1445	5,090	18.42				

Minimum daily discharge, 90 ft³/s Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340	141	207	195	90	3200	3130	802	569	1170	281	160
2	620	163	212	155	100	2390	2340	3120	530	1040	268	153
3	753	136	205	150	120	1960	1760	4870	521	904	259	148
4	415	126	191	175	120	1800	1360	3340	502	770	258	143
5	264	100	176	169	110	1800	1130	1650	469	694	244	148
6	199	105	170	168	110	3100	1130	1310	460	653	236	151
7	177	110	169	175	110	4770	1200	1340	449	633	235	156
8	168	118	141	174	100	2800	1090	1410	443	590	224	150
9	224	113	116	184	100	1160	1100	1010	432	555	215	144
10	243	119	111	180	100	868	1740	904	432	528	208	137
11	187	237	159	161	102	813	1480	817	427	496	198	128
12	163	802	175	150	107	736	1730	777	441	467	192	129
13	147	487	160	141	125	715	4000	765	755	457	192	127
14	130	344	134	123	126	710	3110	738	4250	445	190	130
16	125	284	136	168	137	1050	2250	684	3380	426	191	158
16	108	265	134	150	164	1970	2460	656	1810	409	183	162
17	105	235	130	145	244	1630	1900	639	1080	393	171	152
18	102	226	120	181	304	1140	1510	738	2820	388	164	142
19	104	237	130	140	587	978	1280	1360	2590	441	160	140
20	146	232	135	139	1260	875	1160	1130	2090	421	148	145
21	231	227	141	129	1140	730	1060	920	4870	351	153	155
22	245	222	143	120	1320	659	992	820	2880	323	157	142
23	233	183	151	115	1410	618	911	753	1390	400	155	138
24	222	140	168	120	1310	603	828	704	1090	590	157	139
25	194	150	355	120	977	626	776	663	954	405	166	140
26	173	165	497	116	859	678	732	637	855	343	171	139
27	163	167	337	110	1210	459	681	627	1110	338	172	137
28	152	169	423	100	2230	487	644	599	2970	327	191	135
29	145	167	490	100	---	803	628	589	2470	363	169	142
30	136	148	310	120	---	1410	610	620	1400	330	163	158
31	138	---	222	100	---	3050	---	582	---	298	165	---
TOTAL	6752	6318	6348	4473	14672	44588	44722	35574	44739	15948	6036	4328
MEAN	218	211	205	144	524	1438	1491	1148	1491	514	195	144
MAX	753	802	497	195	2230	4770	4000	4870	4870	1170	281	162
MIN	102	100	111	100	90	459	610	582	427	298	148	127
CFSM	.24	.23	.23	.16	.58	1.60	1.66	1.28	1.66	.57	.22	.16
IN.	.28	.26	.26	.18	.61	1.84	1.85	1.47	1.85	.66	.25	.18
AC-FT	13390	12530	12590	8870	29100	88440	88710	70560	88740	31630	11970	8580

CAL YR 1982 TOTAL 74555 MEAN 204 MAX 4320 MIN 17 CFSM .23 IN 3.08 AC-FT 147900
WTR YR 1983 TOTAL 234498 MEAN 642 MAX 4870 MIN 90 CFSM .71 IN 9.69 AC-FT 465100

06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA

LOCATION.--Lat 43°22'43", long 95°10'52", in NE1/4 SW1/4 sec.23, T.99N., R.37W., Dickinson County, Hydrologic Unit 10230003, at pumping station of Lakeside Laboratory on west shore, 2.3 mi upstream from lake outlet and 3.8 mi northwest of Milford.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--May 1933 to current year. Published as "Okoboji Lake at Arnold's Park" 1933-37 and as "Okoboji Lake at Lakeside Laboratory near Milford" 1937-66.

GAGE.--Water-stage recorder. Datum of gage is 1,391.76 ft NGVD, 94.51 ft above Iowa Lake Survey datum, and about 4.0 ft below crest of spillway. Prior to June 17, 1938, nonrecording gage at State Pier at Arnolds Park at same datum.

REMARKS.--Lake formed by concrete dam with ungated spillway at elevation 1,395.8 ft NGVD. Lake is used for conservation and recreation. Area of lake is approximately 3,900 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 6.18 ft July 7, 1962; minimum observed, 0.20 ft Sept. 20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.77 ft, from inside floodmark, sometime during period April 12-23; minimum, 3.77 ft Sept. 27.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.53	4.67	---	4.84	4.55	4.82	5.21	5.34	4.82	5.28	4.78	4.16
2	4.61	4.55	---	4.82	4.56	4.86	5.25	5.38	4.82	5.30	4.75	4.14
3	4.64	4.52	---	4.82	4.57	4.91	5.28	5.36	4.82	5.31	4.72	4.12
4	4.64	4.51	---	4.81	4.56	4.96	5.31	5.34	4.80	5.31	4.70	4.10
5	4.65	4.49	---	4.79	4.55	5.04	5.33	5.31	4.78	5.30	4.68	4.09
6	4.65	4.48	---	4.78	4.55	5.14	5.36	5.31	4.76	5.28	4.66	4.07
7	4.65	4.48	---	4.77	4.54	5.23	5.37	5.31	4.74	5.25	4.63	4.05
8	4.65	4.47	4.68	4.75	4.53	5.25	5.39	5.26	4.74	5.23	4.59	4.03
9	4.68	4.52	4.68	4.75	4.52	5.25	5.42	5.23	4.73	5.21	4.55	4.00
10	4.68	4.60	4.66	4.75	4.52	5.24	5.44	5.20	4.72	5.18	4.53	3.98
11	4.65	4.68	4.65	4.74	4.51	5.23	5.44	5.18	4.71	5.15	4.48	3.97
12	4.65	4.71	4.65	4.73	4.50	5.22	---	5.17	4.71	5.12	4.44	3.94
13	4.64	4.75	4.64	4.72	4.50	5.21	---	5.16	4.76	5.09	4.40	3.92
14	4.62	4.74	4.63	4.71	4.49	5.20	---	5.13	4.91	5.07	4.38	3.91
15	4.62	4.73	4.63	4.70	4.48	5.24	---	5.10	4.92	5.05	4.35	3.92
16	4.60	4.74	4.63	4.69	4.48	5.28	---	5.09	4.92	5.03	4.34	3.92
17	4.58	4.73	4.62	4.68	4.49	5.26	---	5.06	4.92	5.01	4.32	3.93
18	4.56	---	4.61	4.66	4.50	5.25	---	5.08	4.93	5.08	4.30	3.91
19	4.62	---	4.60	4.65	4.51	5.24	---	5.09	4.92	5.07	4.28	3.91
20	4.65	---	4.60	4.64	4.55	5.22	---	5.07	5.03	5.05	4.25	3.89
21	4.65	---	4.60	4.63	4.57	5.20	---	5.06	5.07	5.03	4.23	3.85
22	4.63	---	4.60	4.62	4.59	5.18	---	5.04	5.10	5.01	4.22	3.83
23	4.62	---	4.58	4.61	4.64	5.16	---	5.02	5.12	5.02	4.19	3.81
24	4.61	---	4.62	4.60	4.66	5.15	5.46	5.00	5.11	5.00	4.17	3.79
25	4.61	---	4.74	4.60	4.68	5.14	5.45	4.97	5.11	4.96	4.18	3.79
26	4.60	---	4.74	4.59	4.69	5.17	5.40	4.94	5.13	4.93	4.18	3.79
27	4.59	---	4.77	4.58	4.73	5.20	5.37	4.93	5.18	4.91	4.20	3.77
28	4.58	---	4.87	4.57	4.77	5.18	5.34	4.91	5.21	4.89	4.19	3.77
29	4.58	---	4.86	4.58	---	5.17	5.34	4.88	5.24	4.86	4.18	3.81
30	4.58	---	4.85	4.57	---	5.16	5.31	4.86	5.25	4.84	4.20	3.82
31	4.58	---	4.84	4.56	---	5.17	---	4.84	---	4.81	4.18	---
MEAN	4.62	---	---	4.69	4.56	5.16	---	5.21	4.93	5.08	4.40	3.93
MAX	4.68	---	---	4.84	4.77	5.28	---	5.13	5.25	5.31	4.78	4.16
MIN	4.53	---	---	4.56	4.48	4.82	---	4.84	4.71	4.81	4.17	3.77

LITTLE SIOUX RIVER BASIN

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW1/4SW1/4 sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft downstream from bridge on county highway M38, 3.4 mi west by southwest of Spencer, and at mile 4.1.

DRAINAGE AREA.--426 mi².

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 241 ft³/s, 7.68 in/yr, 174,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,450 ft³/s June 21, 1983, gage height, 10.49 ft; no flow Jan. 24 to Mar. 9, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1953 reached a stage of 12.89 ft, discharge, 26,000 ft³/s on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 7	0400	3,120	9.20	June 21	0330	*6,450	*10.49
Apr. 3	0600	2,030	8.25	June 30	1245	3,080	9.44
Apr. 14	0730	4,320	9.63				

Minimum daily discharge, 48 ft³/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	373	318	368	250	134	1850	1320	596	342	2750	234	91
2	760	307	398	250	128	1800	1820	1010	332	1780	210	85
3	986	290	424	250	118	1630	2000	1230	347	1220	194	80
4	853	274	404	270	116	1680	1860	938	323	1130	183	77
5	660	267	394	280	120	1780	1620	791	311	1060	176	80
6	548	258	370	265	125	2350	1490	728	304	871	166	78
7	471	256	348	250	124	2920	1560	720	300	792	159	73
8	429	243	324	220	123	1840	1470	706	287	732	151	69
9	512	265	300	210	122	1150	1420	638	278	666	143	66
10	572	560	270	205	122	1250	1510	592	272	604	137	66
11	491	887	250	175	121	899	1660	553	264	551	129	63
12	433	1160	235	150	121	806	1910	538	266	508	123	61
13	396	1130	260	175	122	794	3650	529	299	474	120	57
14	368	812	280	172	125	767	3880	510	881	447	115	53
15	348	661	265	150	134	759	2440	486	1180	415	111	60
16	320	589	250	160	148	748	1870	474	875	394	107	60
17	307	536	270	163	184	731	1520	459	689	377	105	58
18	296	515	300	160	230	700	1340	479	853	418	100	60
19	299	553	270	156	295	669	1180	557	1310	434	94	59
20	493	628	240	152	425	641	1060	558	2200	390	90	65
21	628	596	233	150	580	599	974	529	4830	353	88	61
22	650	536	238	148	860	568	908	503	2520	326	87	58
23	633	475	243	146	930	539	848	466	1340	341	85	55
24	580	431	267	144	850	522	782	444	915	353	84	55
25	508	420	503	140	850	520	734	424	797	334	91	53
26	455	396	480	132	1030	457	686	401	730	314	96	51
27	420	372	360	128	1300	460	625	391	759	301	101	50
28	398	378	270	126	1710	479	601	381	1240	302	91	48
29	372	376	200	134	---	512	584	382	1540	300	85	51
30	348	366	210	136	---	544	563	366	2790	290	107	54
31	330	---	230	134	---	739	---	356	---	261	105	---
TOTAL	15237	14855	9454	5581	11247	31603	43875	17735	29374	19488	3867	1897
MEAN	492	495	305	180	402	1019	1463	672	979	629	125	63.2
MAX	986	1160	503	280	1710	2920	3880	1230	4830	2750	234	91
MIN	296	243	200	126	116	457	663	356	264	261	84	48
CFSM	1.16	1.16	.72	.42	.94	2.39	3.43	1.34	2.30	1.48	.29	.15
IN.	1.33	1.30	.83	.49	.98	2.76	3.83	1.55	2.57	1.70	.34	.17
AC-FT	30220	29460	18750	11070	22310	62680	87030	35180	58260	38650	7670	3760

CAL YR 1982 TOTAL 99488.6 MEAN 273 MAX 3470 MIN 4.6 CFSM .64 IN 8.69 AC-FT 197300
WTR YR 1983 TOTAL 204213.0 MEAN 559 MAX 4830 MIN 48 CFSM 1.31 IN 17.83 AC-FT 405100

06608850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'24", long 95°14'30", in SW1/4 SW1/4 sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank at downstream side of bridge on State Highway 264, in Linn Grove, and at mile 123.7.

DRAINAGE AREA.--1,548 mi².

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR IA-80-1: 1978-79.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--11 years, 649 ft³/s, 5.69 in/yr, 470,200 acre-ft/yr; median of yearly mean discharges, 620 ft³/s, 5.4 in/yr, 449,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,130 ft³/s Apr. 15, 1983, gage height, 18.06 ft; maximum gage height, 18.4 ft July 12, 1982; minimum daily discharge, 0.70 ft³/s Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 6	0100	3,440	14.10	Apr. 15	0800	*9,130	*18.06
Oct. 24	1200	2,130	11.10	May 5	1145	3,740	14.35
Nov. 15	1800	3,090	13.25	June 23	1100	7,680	17.38
Mar. 8	0100	8,490	17.73	July 2	1030	8,570	17.81

Minimum daily discharge, 185 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1010	1330	1490	860	580	4820	2890	2290	1230	7180	847	307		
2	1670	1270	1500	1020	580	5260	3690	2440	1180	8330	801	279		
3	2240	1210	1500	1100	540	5990	4680	2880	1150	7550	750	257		
4	2820	1150	1520	1180	500	6240	5520	3480	1150	6150	695	244		
5	3310	1100	1530	1200	470	6240	5700	3740	1090	4880	647	298		
6	3410	1060	1490	1200	510	6690	5460	3520	1050	4080	608	387		
7	3190	1030	1420	1180	505	7890	5260	3210	1000	3740	578	312		
8	3070	994	1330	1070	500	8180	5210	2940	970	3450	548	265		
9	2910	992	1080	1020	495	6310	5180	2740	941	3170	519	242		
10	2580	1280	1010	1030	485	5120	5180	2540	912	2950	483	220		
11	2370	1780	945	1010	475	4650	5200	2430	884	2730	457	207		
12	2260	2280	880	940	470	4090	5500	2270	863	2490	429	198		
13	2150	2640	920	860	465	3630	6670	2140	882	2270	411	189		
14	1980	2930	964	910	470	3510	8350	2040	1230	2030	397	185		
15	1800	3060	1120	900	490	3530	9030	1960	1740	1820	379	191		
16	1650	2970	1000	810	550	3400	8410	1870	2150	1620	368	209		
17	1510	2670	1020	820	620	3250	7230	1800	2540	1470	353	308		
18	1410	2360	1060	830	690	3100	6260	1790	2980	1430	340	680		
19	1340	2220	1080	835	830	2960	5560	1860	2900	1460	327	473		
20	1460	2140	1000	780	1130	2800	5010	1940	3420	1500	314	828		
21	1720	2110	939	725	1420	2640	4850	2000	4550	1410	312	795		
22	1930	2110	900	730	1670	2480	4130	1980	6210	1260	310	686		
23	2070	2080	920	685	1970	2330	3800	1880	7430	1190	288	467		
24	2120	1950	960	670	2360	2200	3530	1750	6430	1240	280	395		
25	2080	1780	1080	670	3000	2110	3280	1640	4900	1190	273	356		
26	1980	1580	1350	660	3200	2060	3040	1540	3790	1130	272	325		
27	1860	1460	1260	640	3450	1920	2830	1480	3470	1060	287	301		
28	1720	1470	1150	580	4070	1650	2620	1410	3540	1010	289	285		
29	1610	1480	900	570	---	1650	2460	1350	4050	1000	293	282		
30	1510	1480	710	575	---	1820	2340	1320	5520	965	279	281		
31	1420	---	740	580	---	2180	---	1280	---	903	302	---		
TOTAL	64160	53966	34768	26640	32495	120700	148570	67510	80152	82658	13437	10352		
MEAN	2070	1799	1122	859	1161	3894	4952	2178	2672	2666	433	345		
MAX	3410	3060	1530	1200	4070	8180	9030	3740	7430	8330	847	820		
MIN	1010	992	710	570	465	1650	2340	1280	863	903	272	185		
CFSM	1.34	1.16	.73	.56	.75	2.52	3.20	1.41	1.73	1.72	.28	.22		
IN.	1.54	1.30	.84	.64	.78	2.90	3.57	1.62	1.93	1.99	.32	.25		
AC-FT	127300	107000	68960	52840	64450	239400	294700	133900	159000	164000	26650	20530		
CAL YR 1982	TOTAL	406957	MEAN	1115	MAX	8170	MIN	36	CFSM	.72	IN	9.78	AC-FT	807200
WTR YR 1983	TOTAL	735408	MEAN	2015	MAX	9030	MIN	185	CFSM	1.30	IN	17.67	AC-FT	1459000

LITTLE SIOUX RIVER BASIN

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42° 28' 20", long 95° 47' 49", in NE1/4 NW1/4 sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003, on right bank 50 ft upstream from bridge on State Highway 31, 0.3 mi upstream from Bacon Creek, 0.5 mi west of Correctionville, 0.8 mi downstream from Pierson Creek, and at mile 56.0.

DRAINAGE AREA.--2,500 mi².

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,096.49 ft NGVD. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi downstream at datum 1.25 ft lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--56 years (water years 1919-24, 1929-31, 1937-83), 766 ft³/s, 4.16 in/yr, 555,000 acre-ft/yr; median of yearly mean discharge, 580 ft³/s, 3.2 in/yr, 420,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s Apr. 7, 1965, gage height, 25.86 ft; minimum daily, 2.6 ft³/s July 17, 25, 1936, caused by construction dam above gage; minimum daily discharge excluding regulation, 4.0 ft³/s Oct. 9, 12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft, present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 11	0300	4,370	14.10	June 22	1015	*16,400	*22.06
Mar. 8	1030	16,000	21.63	June 29	1200	15,200	21.70
Apr. 14	1315	14,600	21.50	July 23	0330	4,000	13.54
May 4	0700	6,990	17.33				

Minimum daily discharge, 554 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1330	2170	2080	1300	1000	8630	5850	4110	2160	14000	1830	750		
2	1980	2050	2080	1600	1000	9540	6600	5620	2090	12900	1720	729		
3	2930	1950	2100	1600	900	9300	7330	6790	2040	11400	1640	709		
4	3280	1850	2090	1500	900	9660	7940	6870	1970	10900	1560	664		
5	3440	1770	2090	1500	900	10500	8380	5970	1910	10100	1470	689		
6	3680	1700	2090	1500	800	12300	9100	5710	1860	9090	1400	802		
7	3900	1650	2060	1400	800	14700	9460	5860	1790	7930	1340	896		
8	4050	1590	1950	1400	800	15600	9290	5700	1730	6840	1270	875		
9	4140	1550	1830	1400	800	13800	8980	4960	1680	5910	1210	762		
10	4270	1690	1670	1400	800	12200	8910	4450	1630	5310	1150	688		
11	4250	2170	1200	1400	800	10200	9110	4110	1570	4850	1090	643		
12	3740	3020	1700	1400	800	8450	9670	3880	1560	4450	1030	602		
13	3420	3500	1700	1400	800	7640	11400	3700	1800	4120	984	576		
14	3220	3680	1600	1300	800	6860	14200	3470	3400	3800	947	554		
15	2990	3780	1600	1300	850	6420	12900	3260	3490	3490	913	587		
16	2740	3870	1500	1300	900	6500	13100	3110	3320	3200	875	616		
17	2510	3870	1500	1300	950	6530	13700	2990	3490	2960	820	646		
18	2360	3740	1500	1300	1100	6070	12500	3320	7140	2880	775	802		
19	2250	3450	1500	1300	1300	5600	11400	3470	6470	3060	726	1090		
20	2270	3250	1500	1300	1600	5210	9860	3390	10600	2970	688	1290		
21	2440	3100	1500	1300	2000	4850	8920	3320	13200	2700	706	1320		
22	2650	2950	1500	1300	2600	4540	8140	3250	15400	2550	710	1420		
23	2880	2860	1500	1300	3300	4260	7570	3140	11500	3330	684	1240		
24	3030	2760	1500	1300	3800	4030	6790	2990	9190	3120	660	1070		
25	3070	2630	1700	1200	4000	3840	6090	2810	9140	2550	645	966		
26	3030	2440	2100	1200	4160	3610	5480	2650	9230	2380	653	892		
27	2910	2290	2000	1200	4360	3170	4950	2530	8950	2240	892	830		
28	2750	2150	1800	1100	6230	2980	4530	2430	11300	2140	919	822		
29	2590	2110	1500	1100	---	3040	4210	2410	14800	2090	891	778		
30	2430	2100	1200	1100	---	3090	3950	2290	14000	2110	797	770		
31	2290	---	1000	1000	---	4040	---	2220	---	1960	794	---		
TOTAL	92820	77690	52640	41000	49050	227160	260310	120780	178410	157330	31789	25078		
MEAN	2994	2590	1698	1323	1752	7328	8677	3896	5947	5075	1025	836		
MAX	4270	3870	2100	1600	6230	15600	14200	6870	15400	14000	1830	1420		
MIN	1330	1550	1000	1000	800	2980	3950	2220	1560	1960	645	554		
CFSM	1.20	1.04	.68	.53	.70	2.93	3.47	1.56	2.38	2.03	.41	.33		
IN.	1.38	1.16	.78	.61	.73	3.38	3.87	1.80	2.65	2.34	.47	.37		
AC-FT	184100	154100	104400	81320	97290	450600	516300	239600	353900	312100	63050	49740		
CAL YR 1982	TOTAL	615374	MEAN	1686	MAX	8920	MIN	60	CFSM	.67	IN	9.16	AC-FT	1221000
WTR YR 1983	TOTAL	1314057	MEAN	3600	MAX	15600	MIN	554	CFSM	1.44	IN	19.55	AC-FT	2606000

LITTLE SIOUX RIVER BASIN

06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'25", long 95°48'35", in SE1/4 SE1/4 sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank at downstream side of bridge on State Highway 175, 1.0 mi downstream from Simmons Creek, 1.1 mi southwest of intersection of State Highways 175 and 141 in Mapleton, 2.1 mi upstream from McCleery Creek, and 16.0 mi upstream from mouth.

DRAINAGE AREA.--669 mi².

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,085.85 ft NGVD. See WSP 1730 for history of changes prior to Sept. 20, 1956.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height telemeter at station.

AVERAGE DISCHARGE.--42 years, 246 ft³/s, 4.99 in/yr, 178,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s Sept. 12, 1978, gage height, 16.74 ft; maximum gage height, 22.1 ft June 12, 1950; no flow Sept. 21, 22, 1945 caused by temporary dam above gage; minimum daily discharge excluding regulation, 2.5 ft³/s Feb. 17-20, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 7	2130	4,510	7.97	June 21	1415	*17,200	*16.84
June 13	2030	6,640	10.17	June 28	0115	7,700	10.97
June 19	0700	7,550	10.84				

Minimum daily discharge, 250 ft³/s Dec. 10,11,29,30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200	408	468	450	280	2770	3480	1110	818	3250	640	389
2	1310	374	490	450	280	2500	3260	2320	785	2020	613	348
3	1210	364	487	400	280	2210	2490	3190	771	1680	596	330
4	928	348	457	400	280	2000	1880	2280	752	1380	576	312
5	757	348	450	350	280	2150	1590	1740	739	1230	560	314
6	655	345	443	350	280	2900	1560	1630	725	1140	547	342
7	593	339	432	350	280	4170	1610	1600	712	1070	527	396
8	590	332	408	350	280	3280	1520	1410	697	1010	504	350
9	748	336	350	350	280	1630	1490	1250	689	966	494	317
10	684	425	250	350	280	1290	1770	1170	684	936	470	296
11	612	605	250	320	280	1170	1750	1110	666	885	464	288
12	554	928	350	320	280	1110	1890	1080	677	840	434	277
13	520	791	400	320	280	1110	3230	1070	1860	806	416	273
14	486	679	350	320	280	1130	2720	1010	2750	776	416	272
15	467	597	320	320	300	1330	2000	967	1640	756	412	347
16	460	554	320	320	350	1800	2710	937	1320	728	412	334
17	432	539	320	320	400	1730	2600	926	1220	715	394	314
18	436	497	320	320	450	1520	2120	1080	3680	751	372	301
19	456	494	300	320	800	1330	2010	1340	6550	993	352	303
20	628	555	300	320	1500	1210	1980	1390	6490	794	336	328
21	619	534	300	300	1930	1110	1840	1200	14400	704	398	472
22	594	476	300	300	2000	1040	1690	1120	5320	675	456	451
23	582	457	350	300	2320	991	1500	1030	2300	1260	415	373
24	566	429	500	300	1690	979	1350	973	1770	1120	389	338
25	547	421	670	300	1270	965	1270	927	1510	885	374	325
26	527	418	720	300	1130	925	1190	892	1330	762	366	313
27	517	404	500	300	2370	578	1100	880	4240	768	383	302
28	513	436	300	300	2900	588	1050	836	4960	790	617	294
29	503	485	250	280	---	933	1030	865	3590	939	525	315
30	486	468	250	280	---	1050	997	885	4330	744	485	318
31	468	---	350	280	---	1720	---	875	---	680	447	---
TOTAL	19648	14386	11955	10240	23330	49219	56677	39093	77975	32053	14390	9932
MEAN	634	480	386	330	833	1588	1889	1261	2599	1034	464	331
MAX	1310	928	720	450	2900	4170	3480	3190	14400	3250	640	472
MIN	432	332	250	280	280	578	997	836	666	675	336	272
CFSM	.95	.72	.58	.49	1.25	2.37	2.82	1.89	3.89	1.55	.69	.50
IN.	1.09	.80	.66	.57	1.30	2.74	3.15	2.17	4.34	1.78	.80	.55
AC-FT	38970	28530	23710	20310	46280	97630	112400	77540	154700	63580	28540	19700
CAL YR 1982	TOTAL	145049.0	MEAN 397	MAX 6000	MIN 7.0	CFSM .59	IN 8.07	AC-FT 287700				
WTR YR 1983	TOTAL	358898.0	MEAN 983	MAX 14400	MIN 250	CFSM 1.47	IN 19.96	AC-FT 711900				

LITTLE SIOUX RIVER BASIN

06607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°58'21", in NW1/4 NE1/4 sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi east of gaging station on Monona-Harrison ditch near Turin, 2.5 mi downstream from Maple River, 3.8 mi south of Turin, 6.2 mi northeast of Blencoe, and at mile 13.5.

DRAINAGE AREA.--3,526 mi². Prior to Jan. 15, 1958, 4,426 mi², combined area above this station and Monona-Harrison ditch station 1.0 mi west.

PERIOD OF RECORD.--January 1958 to current year. April 1939 to May 1942 at site 4.7 mi downstream, published as "near Blencoe" June 1942 to January 1958 at site 1,200 ft east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 mi upstream.

GAGE.--Water-stage recorder. Datum of gage is 1,019.850 ft NGVD (Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--25 years (water years 1959-83), 1,245 ft³/s, 4.79 in/yr, 902,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,200 ft³/s June 21, 1983 gage height, 26.54 ft; maximum gage height, 27.44 ft Feb. 19, 1971, backwater from ice; minimum daily discharge, 17 ft³/s Jan. 18-20, Jan. 28 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 11	1230	5,310	15.34	May 20	0800	5,560	14.60
Nov. 17	1415	4,750	14.62	June 14	0315	7,530	16.33
Feb. 26	0430	11,100	19.98	June 21	2030	*31,200	*26.54
Mar. 7	1230	19,600	23.72	June 30	1030	20,300	23.00
Apr. 14	2145	16,600	20.82	July 23	1845	5,810	14.14
May 3	1600	10,600	18.30				

Minimum daily discharge, 988 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2300	2590	2840	1800	1300	11200	9710	5750	2780	18600	2750	1320		
2	2940	2470	2770	2000	1300	13100	9600	8180	2710	16200	2560	1210		
3	3600	2380	2770	2200	1200	13200	9780	10600	2600	13800	2380	1160		
4	4120	2330	2770	2200	1100	12800	9770	9690	2480	12600	2300	1130		
5	4200	2270	2760	2200	1100	13400	9830	9070	2330	11900	2140	1110		
6	4290	2240	2790	2000	1100	15400	10200	8380	2280	10700	2000	1130		
7	4480	2190	2840	2000	1100	19300	10800	8340	2170	9580	1900	1300		
8	4720	2150	2750	2000	1100	18600	10600	8230	2100	8400	1840	1370		
9	5030	2130	2640	1800	1100	16600	10400	7480	2000	7500	1760	1310		
10	5170	2200	2400	1800	1100	12800	10200	6710	1940	6910	1740	1180		
11	5270	2480	1800	1800	1100	10200	9890	6130	1860	6410	1620	1090		
12	4840	3370	2300	1800	1100	8060	10400	5770	1840	5930	1540	1040		
13	4240	4200	2900	1600	1100	7340	12800	5480	2460	5530	1480	1010		
14	3890	4590	2500	1600	1100	7030	15300	5190	7050	5140	1440	988		
15	3640	4540	2300	1500	1200	7300	16200	4740	5610	4740	1410	1050		
16	3350	4610	2200	1500	1200	7370	15500	4380	4960	4360	1320	1100		
17	3080	4700	2200	1500	1300	7490	16100	4120	4590	3990	1300	1060		
18	2880	4650	2200	1500	1400	7150	15400	4300	9790	3690	1260	1060		
19	2740	4450	2200	1450	1500	6970	14000	5310	13700	4310	1210	1320		
20	2830	4160	2200	1450	2000	6920	12600	5410	13000	4140	1180	1730		
21	2940	3950	2200	1450	3000	6600	11600	4960	26000	3670	1180	1870		
22	3120	3760	2200	1400	4500	6320	10700	4730	22900	3450	1280	2070		
23	3330	3590	2200	1400	6800	5860	10100	4510	17300	4350	1260	1940		
24	3470	3480	2300	1400	8400	5520	9270	4260	13100	4900	1230	1650		
25	3470	3390	2600	1400	9400	5410	8520	3960	11600	3930	1210	1460		
26	3380	3260	3000	1400	9970	5370	7820	3640	11600	3450	1190	1320		
27	3270	3060	3000	1300	7830	4660	7190	3450	13300	3370	1260	1210		
28	3180	2980	2500	1300	10500	3890	6650	3240	15800	3250	1520	1130		
29	3020	2920	2000	1300	---	4180	6280	3120	16600	3350	1560	1120		
30	2870	2870	1500	1300	---	4490	5900	3070	19800	3170	1440	1110		
31	2710	---	1500	1300	---	6140	---	2870	---	3010	1400	---		
TOTAL	112370	97960	75130	50650	84900	280670	323110	175070	256250	204330	49660	38548		
MEAN	3625	3265	2424	1634	3032	9054	10770	5647	8542	6591	1602	1285		
MAX	5270	4700	3000	2200	10500	19300	16200	10600	26000	18600	2750	2070		
MIN	2300	2130	1500	1300	1100	3890	5900	2870	1840	3010	1180	988		
CFSM	1.03	.93	.69	.46	.86	2.57	3.05	1.60	2.42	1.87	.45	.36		
IN.	1.19	1.03	.79	.53	.90	2.96	3.41	1.85	2.70	2.16	.52	.41		
AC-FT	222900	194300	149000	100500	168400	556700	640900	347300	508300	405300	98500	76460		
CAL YR 1982	TOTAL	794550	MEAN	2177	MAX	12200	MIN	100	CFSM	.62	IN	8.38	AC-FT	1576000
WTR YR 1983	TOTAL	1748648	MEAN	4791	MAX	26000	MIN	988	CFSM	1.36	IN	18.45	AC-FT	3468000

SOLDIER RIVER BASIN

06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'50", long 95°55'54", in NW1/4 NE1/4 sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on right bank at downstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi downstream from Cobb Creek, 0.5 mi upstream from Mogger Ditch, and 13.1 mi upstream from mouth.

DRAINAGE AREA.--407 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft NGVD. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft gage height Mar. 2, 1945 to Sept. 24, 1953. Prior to Feb. 1954, on left bank at downstream side of bridge.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--43 years, 126 ft³/s, 4.20 in/yr, 91,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s June 12, 1950, gage height, 28.17 ft; minimum daily, 2.0 ft³/s Jan. 2-10, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,820 ft³/s June 20, gage height 13.21 ft, no peak above base of 5,000 ft³/s; minimum daily, 60 ft³/s Dec. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	579	99	110	110	80	790	1040	455	249	707	214	140
2	305	95	113	110	80	733	689	1040	250	468	209	131
3	204	94	101	120	90	703	627	1190	261	420	202	124
4	140	92	91	100	90	695	566	650	249	400	203	120
5	133	91	89	100	100	726	546	587	241	352	198	132
6	122	93	88	100	110	1360	621	625	234	340	189	181
7	118	97	87	100	110	1030	571	920	220	325	186	125
8	214	93	82	100	100	599	514	545	205	309	180	115
9	169	95	70	100	100	475	594	502	197	299	175	111
10	144	108	60	100	100	440	719	455	223	290	166	109
11	130	229	80	95	100	434	564	440	203	280	161	108
12	124	280	100	90	100	404	772	440	201	255	155	110
13	124	135	90	100	110	414	970	442	815	251	153	105
14	122	117	120	100	130	394	731	413	1560	252	154	108
15	117	107	120	95	170	678	747	403	445	250	155	178
16	105	110	110	90	200	601	920	365	332	244	150	157
17	105	107	100	90	230	461	815	357	323	249	143	123
18	105	110	100	90	200	424	710	475	2400	243	138	113
19	135	125	100	88	800	407	678	517	743	251	129	291
20	259	124	100	88	1430	396	639	436	1710	237	121	598
21	144	102	100	88	835	378	605	386	950	223	145	165
22	124	95	100	88	1170	372	582	359	552	215	175	129
23	115	90	120	90	972	372	535	327	483	211	150	122
24	114	89	150	90	575	360	482	308	445	222	151	120
25	110	91	532	85	403	357	462	297	411	227	147	115
26	108	101	131	80	539	381	448	287	382	217	144	112
27	108	85	110	80	1560	304	408	283	1280	301	141	111
28	110	109	90	85	1060	354	395	259	1760	291	142	112
29	109	120	75	100	---	445	381	251	584	289	135	140
30	104	112	90	120	---	461	365	250	595	251	134	132
31	99	---	110	100	---	888	---	253	---	229	175	---
TOTAL	4701	3398	3519	2972	11545	16838	18695	14560	18513	9129	5021	4438
MEAN	152	113	114	95.9	412	543	623	470	617	294	162	148
MAX	579	280	532	120	1560	1360	1040	1190	2400	707	214	598
MIN	99	85	60	80	80	304	365	253	197	211	121	105
CFSM	.37	.28	.28	.24	1.01	1.33	1.53	1.16	1.52	.72	.40	.35
IN.	.43	.31	.32	.27	1.06	1.54	1.71	1.33	1.69	.83	.46	.41
AC-FT	9320	6740	6980	5890	22900	33400	37080	28880	36720	18110	9960	8800
CAL YR 1982 TOTAL	61276.0		MEAN 168	MAX 7490	MIN 9.0	CFSM .41	IN 5.60	AC-FT 121500				
WTR YR 1983 TOTAL	113330.0		MEAN 310	MAX 2400	MIN 60	CFSM .75	IN 10.36	AC-FT 224800				

BOYER RIVER BASIN

06609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'33", long 95°46'57", in SE1/4 NW1/4 sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank 9 ft downstream from Illinois Central Railroad bridge at Logan, 0.4 mi downstream from Elk Grove Creek, 10.5 mi upstream from Willow Creek, and 15.8 mi upstream from mouth.

DRAINAGE AREA.--871 mi².

PERIOD OF RECORD.--May 1918 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 955: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft NGVD (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--51 years (water years 1919-24, 1939-83), 315 ft³/s, 4.91 in/yr, 228,200 acre-ft/yr; median of yearly mean discharge, 280 ft³/s, 4.4 in/yr, 203,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s Feb. 19, 1971, gage height, 22.65 ft, from floodmark; maximum gage height, 25.22 ft Mar. 1, 1965, backwater from ice; minimum daily discharge, 1.5 ft³/s July 16, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,290 ft³/s June 28, gage height, 12.43 ft at 1900 hours, no other peak above base of 5,000 ft³/s; minimum daily, 189 ft³/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1190	279	353	500	450	2400	3550	1270	731	2240	442	318
2	1120	277	350	500	350	2240	2780	2520	716	1690	416	295
3	947	267	340	470	250	2230	2350	3090	708	1180	402	277
4	678	257	316	470	250	2080	1990	2520	664	1050	397	261
5	516	256	308	450	300	2190	1720	1900	633	883	399	254
6	454	254	308	450	350	2970	1820	1750	619	808	387	284
7	410	254	303	450	350	4320	1820	2330	592	760	383	274
8	673	256	284	450	320	2880	1610	2050	576	705	375	271
9	942	254	200	450	320	1750	1660	1590	549	676	365	255
10	915	265	250	450	320	1500	2210	1450	544	629	358	240
11	612	858	300	430	300	1370	1970	1330	554	597	346	232
12	502	1470	350	430	300	1240	2120	1280	534	561	329	230
13	441	916	320	430	300	1250	3080	1280	591	541	327	226
14	403	619	300	430	300	1230	3080	1190	2290	523	327	226
15	376	501	300	430	350	1470	2360	1160	1760	513	326	251
16	348	465	300	410	450	2330	2780	1060	1090	506	314	273
17	328	434	270	410	600	2060	2550	1030	889	502	300	259
18	323	412	270	410	800	1680	2280	1190	2460	495	288	248
19	328	419	270	380	1200	1490	2060	1610	2830	516	280	248
20	418	441	250	380	3800	1350	1950	1590	2940	506	269	870
21	465	413	250	380	2570	1230	1840	1300	3990	464	314	408
22	408	387	250	350	2700	1160	1740	1200	4620	443	383	270
23	381	368	300	350	3050	1110	1590	1080	2380	434	327	235
24	355	318	350	350	2070	1080	1450	985	1420	489	313	216
25	332	331	400	320	1430	1060	1350	923	1100	470	302	208
26	323	336	638	320	1200	1120	1290	868	928	458	288	204
27	312	318	500	300	2320	932	1190	854	1210	502	287	197
28	315	333	450	300	3260	725	1150	821	4290	531	293	189
29	312	383	300	400	---	1170	1110	768	3010	497	350	205
30	299	372	300	600	---	1280	1080	761	2600	522	317	243
31	287	---	400	500	---	2170	---	750	---	458	397	---
TOTAL	15713	12713	10080	12950	30260	53067	59630	43600	47818	21149	10601	8167
MEAN	507	424	325	418	1081	1712	1988	1406	1594	682	342	272
MAX	1190	1470	638	600	3800	4320	3650	3090	4620	2240	442	870
MIN	287	254	200	300	250	725	1080	750	534	434	269	189
CFSM	.58	.49	.37	.48	1.24	1.97	2.28	1.61	1.83	.78	.39	.31
IN.	.67	.54	.43	.55	1.29	2.27	2.55	1.86	2.04	.90	.45	.35
AC-FT	31170	25220	19990	25690	60020	105300	118300	86480	94850	41950	21030	16200
CAL YR 1982	TOTAL	174989	MEAN 479	MAX 10000	MIN 27	CFSM .55	IN 7.47	AC-FT 347100				
WTR YR 1983	TOTAL	325748	MEAN 892	MAX 4620	MIN 189	CFSM 1.02	IN 13.91	AC-FT 646100				

MISSOURI RIVER MAIN STEM

06610000 MISSOURI RIVER AT OMAHA, NE

LOCATION.--Lat 41°15'32", long 95°55'20", in SE1/4 NW1/4 sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9.

DRAINAGE AREA.--322,800 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE (revised).--Water-stage recorder. Datum of gage is 948.24 ft NGVD. See WSP 1730 for history of changes prior to Sept. 30, 1936. Oct. 1, 1936 to Sept. 30, 1982 at datum 10.00 ft higher.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--55 years, 30,140 ft³/s, 21,840,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft³/s Apr. 18, 1952, gage height, 40.20 ft, present datum; minimum, about 2,200 ft³/s Jan. 6, 1937; minimum gage height observed, 7.23 ft, present datum, Jan. 10, 1957, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 82,200 ft³/s Mar. 8, gage height, 22.41 ft; maximum gage height, 25.94 ft June 30, backwater from Platte River; minimum daily discharge, 28,800 ft³/s Feb. 5; minimum gage height, 14.08 ft Jan. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41900	44900	53600	31200	31700	60600	57100	43300	38800	74500	47200	43000
2	43700	46200	53900	31400	30100	61900	63000	50100	39000	66100	46400	42300
3	44200	47300	55500	31300	29200	61400	57600	62900	39900	61700	44900	42100
4	42400	47800	56900	31400	29300	62100	48700	66800	40400	57000	45200	40800
5	41000	47400	55000	31700	28800	62500	47300	59200	40200	53800	44700	40600
6	41200	48000	52200	32200	28900	65300	50800	53300	39500	51800	44200	42100
7	41200	47600	50200	33100	29600	78200	55100	52700	39400	49500	44100	41800
8	42000	46800	46900	33300	29600	80500	54200	52400	38900	49800	44100	41200
9	43600	47000	44700	32500	29700	72800	51500	48200	38600	48600	43200	41000
10	46800	47400	43300	32500	29800	63100	51400	45200	39000	45600	43700	41400
11	45700	50000	41600	32500	29900	57600	51000	44300	39100	44000	43600	40900
12	44700	53300	39200	31300	29500	54500	51000	44800	39000	43100	43800	41000
13	44600	55000	36200	30600	30100	51200	57100	46100	39500	41300	43400	42500
14	44700	55700	35100	31100	31000	49600	67100	44700	54900	40500	43000	42000
15	44600	55000	33600	31300	32300	51400	69000	42800	65800	40800	42900	41500
16	43700	53700	32900	30200	33500	54500	61800	41400	54200	41800	42600	41400
17	44800	52800	32800	29800	35900	53700	60400	41200	42100	42700	42400	41100
18	45300	53200	33100	29300	36700	48800	62000	42100	46900	43200	42200	39600
19	45400	55200	33800	29100	40100	46700	57700	45900	60400	43000	41800	40900
20	46200	57100	33700	30800	50500	46100	53100	47100	54600	44100	41400	43300
21	46900	56800	33400	31900	46900	45900	52300	44600	58900	45900	41000	42400
22	45900	56000	33600	31200	44200	44800	51300	41700	75500	47700	40800	40400
23	45000	58000	34000	32200	44900	44300	50500	40600	76300	46600	41800	40500
24	45600	57400	34100	31500	45300	43900	49800	39800	62300	49300	42100	39900
25	46800	56200	35900	31100	45900	43600	48500	39000	55600	50900	42500	40500
26	47800	55000	36700	30600	46600	44600	48400	39100	53400	49000	42700	41500
27	47500	53700	35000	29800	48900	45400	47300	39800	52400	48600	42700	40700
28	47400	54100	34100	31100	55600	43700	46000	39000	56600	50900	43000	40300
29	46200	54700	31500	31900	---	42200	44700	38400	59800	49900	43100	40200
30	44800	53700	29900	34200	---	43800	43200	38000	74200	48700	42900	41800
31	44700	---	30400	33600	---	47600	---	38300	---	48100	42700	---
TOTAL	1386300	1567000	1232700	975700	1024500	1673300	1608900	1412800	1525200	1518500	1340100	1238700
MEAN	44720	52230	39760	31470	36590	53980	53630	45570	50840	48980	43230	41290
MAX	47800	58000	56900	34200	55600	80500	69000	66800	76300	74500	47200	43300
MIN	41000	44900	29900	29100	28800	42200	43200	38000	38600	40500	40800	39600
AC-FT	2750000	3108000	2445000	1935000	2032000	3319000	3191000	2802000	3025000	3012000	2658000	2457000
CAL YR 1982	TOTAL	12918400	MEAN	35390	MAX	58000	MIN	10000	AC-FT	25620000		
WTR YR 1983	TOTAL	16503700	MEAN	45220	MAX	80500	MIN	28800	AC-FT	32740000		

MISSOURI RIVER MAIN STEM

06610000 MISSOURI RIVER AT OMAHA, NB--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Interstate 80 highway bridge 2.0 mi downstream from gaging station. Samples for particle-size distribution were collected from boat cross-section 3.6 mi downstream from gaging station.

PERIOD OF RECORD.--Water years 1969-76, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSES: July 1969 to June 1972.
SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to September 1981.
WATER TEMPERATURES: October 1971 to September 1976, January 1978 to September 1981.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 4,5, 1980; minimum daily, 335 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 165 mg/L Sept. 13, 1976.
SEDIMENT LOADS: Maximum daily, 1,060,000 tons May 19, 1974; minimum daily, 3,990 tons Jan. 14, 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, SOLVED (MG/L) (00300)	OXYGEN, (PERCENT SATURATION) (00301)	BAROMETRIC PRESURE (MM HG) (00025)	COLIFORM, FE CAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)
NOV , 1982											
01...	1330	44600	780	8.6	11.0	32	10.5	118	--	110	130
JAN , 1983											
03...	1100	31100	775	8.5	.0	16	11.2	80	--	570	80
MAR											
15...	1330	51400	750	8.1	4.5	150	10.9	87	--	720	K19000
MAY											
02...	1230	48500	775	8.3	12.0	170	9.0	88	728	5600	2600
JUN											
20...	1030	52900	645	7.8	19.0	370	6.4	72	731	25000	98000
AUG											
29...	1140	45000	840	8.3	28.5	22	6.5	87	734	350	K550

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
NOV , 1982											
01...	270	88	65	26	65	34	1.8	4.9	182	220	14
JAN , 1983											
03...	270	90	67	25	62	33	1.7	5.1	181	200	12
MAR											
15...	300	110	74	28	34	19	.9	6.5	191	170	14
MAY											
02...	330	129	80	31	43	22	1.1	6.0	199	200	16
JUN											
20...	230	77	59	20	38	26	1.1	5.7	153	130	14
AUG											
29...	260	94	65	24	74	37	2.1	6.2	167	230	14

DATE	FLUO-DIS-SOLVED (AS F) (00950)	SILICA, SOLVED (MG/L SIO2) (00955)	SOLIDS, RESIDUE DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF TUENTS DIS-SOLVED (MG/L) (70301)	SOLIDS, SOLVED (TONS AC-FT) (70303)	SOLIDS, SOLVED (TONS DAY) (70302)	NITROGEN, DIS-SOLVED (AS N) (00631)	NITROGEN, DIS-SOLVED (AS N) (00608)	NITROGEN, AM-ORGANIC TOTAL (AS N) (00625)	PHOSPHORUS, DIS-SOLVED (AS P) (00671)	PHORUS TOTAL (AS PO4) (71886)
NOV , 1982											
01...	.60	8.0	534	513	.73	64300	1.3	.060	1.40	.040	.43
JAN , 1983											
03...	.50	9.1	507	490	.69	42500	1.2	.190	1.00	.030	.40
MAR											
15...	.40	13	464	455	.63	64400	3.7	.200	2.10	.070	1.7
MAY											
02...	.40	9.3	525	506	.71	68700	3.0	.080	2.40	.050	1.6
JUN											
20...	.40	10	391	370	.53	55800	4.0	.100	2.40	<.010	5.5
AUG											
29...	.60	6.7	547	521	.74	66500	.43	.050	.80	<.010	.46

K Results based on colony count outside the acceptable range (non-ideal colony count).

MISSOURI RIVER MAIN STEM

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET) (81903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (81904)	SEDI- MENT, SUS- PENDED (MG/L) (80164)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
OCT												
13... WATER TEMPERATURE, 13.0°C (1210-1265 HOURS); MEAN DAILY DISCHARGE, 44,500 ft ³ /s.												
13...	1210	635	21.2	4.90	4.85	343	--	76	83	100	--	--
13...	1211	635	--	10.6	4.09	406	--	66	74	99	100	--
13...	1212	636	--	15.1	3.94	476	--	58	67	99	100	--
13...	1213	635	--	17.7	3.72	518	--	51	61	98	100	--
13...	1214	635	--	19.1	3.39	545	--	50	63	98	100	--
13...	1215	635	--	20.0	3.31	651	--	43	52	89	100	--
13...	1216	635	--	20.4	3.39	949	--	30	37	85	100	--
13...	1220	540	16.4	3.80	6.04	680	--	38	51	91	100	--
13...	1221	540	--	8.20	5.78	543	--	49	64	97	100	--
13...	1222	540	--	11.7	5.67	758	--	40	52	95	100	--
13...	1223	540	--	13.7	5.41	703	--	40	57	95	100	--
13...	1224	540	--	14.8	5.37	948	--	30	42	88	100	--
13...	1225	540	--	15.4	5.13	1200	--	25	34	81	100	--
13...	1226	430	16.8	--	--	775	17	34	--	--	--	--
13...	1235	315	13.2	3.10	5.35	648	--	44	56	93	100	--
13...	1236	315	--	6.60	5.39	691	--	40	51	93	100	--
13...	1237	315	--	9.40	5.02	1160	--	26	34	78	100	--
13...	1238	315	--	11.0	5.13	1030	--	25	35	81	100	--
13...	1239	315	--	11.9	4.72	1170	--	25	31	77	100	--
13...	1240	315	--	12.4	4.83	1290	--	21	29	72	98	100
13...	1241	175	12.4	2.90	3.94	402	--	65	74	97	100	--
13...	1242	175	--	6.20	3.50	471	--	58	70	93	100	--
13...	1243	175	--	8.90	3.13	519	--	64	64	89	100	--
13...	1244	175	--	10.3	2.50	553	--	49	59	88	100	--
13...	1245	175	--	11.2	1.74	650	--	42	50	79	100	--
APR												
13... WATER TEMPERATURE, 8.0°C (1440-1510 HOURS); MEAN DAILY DISCHARGE, 56,800 ft ³ /s.												
13...	1429	585	21.4	4.90	7.00	860	--	88	94	99	100	--
13...	1430	586	--	10.7	6.11	964	--	79	88	99	100	--
13...	1431	585	--	15.3	5.89	1030	--	75	86	100	--	--
13...	1432	585	--	17.8	5.32	1710	--	52	61	97	100	--
13...	1433	585	--	19.3	4.07	2070	--	38	44	91	100	--
13...	1434	585	--	20.1	4.37	2430	--	32	39	93	100	--
13...	1435	585	--	20.6	3.72	2880	--	28	34	93	100	--
13...	1440	510	17.2	4.00	7.78	1110	--	70	79	99	100	--
13...	1441	510	--	8.60	7.50	1100	--	71	81	99	100	--
13...	1442	510	--	12.3	7.50	1400	--	56	64	96	100	--
13...	1443	510	--	14.3	6.52	1510	--	52	61	97	100	--
13...	1444	510	--	15.5	5.93	1440	--	56	67	100	--	--
13...	1445	510	--	16.2	6.19	1900	--	41	52	96	100	--
13...	1450	390	13.0	--	--	1610	22	50	--	--	--	--
13...	1455	300	13.4	3.00	6.52	965	--	82	87	99	100	--
13...	1456	300	--	6.50	6.52	1160	--	69	77	99	100	--
13...	1457	300	--	9.40	6.52	1320	--	61	69	98	100	--
13...	1458	300	--	10.8	5.98	1330	--	60	68	98	100	--
13...	1459	300	--	11.7	6.06	1680	--	49	66	90	100	--
13...	1500	300	--	12.4	5.76	1650	--	50	66	89	100	--
13...	1505	210	21.0	3.10	5.67	954	--	84	88	99	100	--
13...	1506	210	--	6.60	5.54	1140	--	72	79	99	100	--
13...	1507	210	--	9.40	5.02	1320	--	62	70	97	100	--
13...	1508	210	--	11.0	4.89	1420	--	58	65	97	100	--
13...	1509	210	--	11.9	4.89	1290	--	64	73	98	100	--
13...	1510	210	--	12.4	4.63	1410	--	58	67	95	100	--
MAY												
25... WATER TEMPERATURE, 17.5° C, (1225-1320 HOURS); MEAN DAILY DISCHARGE, 39,100 ft ³ /s.												
25...	1226	660	19.8	4.60	4.37	194	--	83	97	100	--	--
25...	1227	660	--	9.90	3.94	228	--	80	93	100	--	--
25...	1229	660	--	14.1	3.72	216	--	79	94	100	--	--
25...	1231	660	--	16.5	3.28	210	--	90	98	100	--	--
25...	1233	660	--	17.8	3.28	246	--	72	92	100	--	--
25...	1235	660	--	18.6	3.07	214	--	81	95	100	--	--
25...	1236	600	20.1	4.60	4.80	209	--	86	94	100	--	--
25...	1237	600	--	10.0	4.59	256	--	64	78	100	--	--
25...	1238	600	--	14.3	3.50	366	--	57	65	98	100	--
25...	1239	600	--	16.7	3.50	382	--	51	61	98	100	--
25...	1240	600	--	18.0	3.07	493	--	40	62	100	--	--
25...	1241	600	--	18.8	2.85	489	--	39	49	97	100	--
25...	1242	530	18.8	--	--	458	16	36	--	--	--	--
25...	1258	380	14.8	3.40	5.02	313	--	59	72	98	100	--
25...	1256	380	--	7.30	4.80	406	--	51	62	97	100	--
25...	1257	380	--	10.4	4.59	508	--	44	56	97	100	--
25...	1258	380	--	12.2	4.37	568	--	37	49	96	100	--
25...	1259	380	--	13.1	4.37	957	--	21	28	94	100	--
25...	1300	380	--	13.7	3.94	2000	--	10	16	80	100	--
25...	1301	225	15.6	3.60	4.37	300	--	64	75	100	--	--
25...	1302	225	--	7.80	4.15	305	--	59	70	100	--	--
25...	1303	225	--	11.1	3.94	440	--	48	58	98	100	--
25...	1304	225	--	13.0	3.07	500	--	39	50	88	100	--
25...	1305	225	--	14.0	2.85	--	--	--	--	--	--	--
25...	1306	225	--	14.7	2.20	--	--	--	--	--	--	--

MISSOURI RIVER MAIN STEM
06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

AUG											
WATER TEMPERATURE, 27.0°C (1145-1235 HOURS); MEAN DAILY DISCHARGE, 44,800 ft ³ /s.											
03...	1145	620	23.2	5.40	5.24	281	--	82	94	100	--
03...	1147	620	--	11.7	4.37	440	--	78	90	100	--
03...	1149	620	--	15.7	4.00	333	--	75	85	100	--
03...	1151	620	--	19.5	2.22	425	--	55	66	100	--
03...	1152	620	--	21.1	2.83	505	--	51	61	81	100
03...	1153	620	--	22.0	2.63	902	--	30	39	98	100
03...	1154	620	--	22.5	2.87	1530	--	19	28	97	100
03...	1155	540	20.8	4.80	5.50	358	--	64	74	100	--
03...	1157	540	--	10.4	5.25	414	--	57	67	98	100
03...	1159	540	--	14.9	4.67	462	--	48	60	99	100
03...	1201	540	--	17.3	3.94	662	--	36	48	96	100
03...	1203	540	--	18.7	3.20	772	--	29	40	98	100
03...	1204	540	--	19.6	2.87	927	--	25	35	98	100
03...	1205	455	18.4	--	--	1690	4	9	--	--	--
03...	1220	355	16.8	3.90	4.39	426	--	44	53	88	100
03...	1221	355	--	8.40	4.33	379	--	51	65	99	100
03...	1222	355	--	12.0	3.85	528	--	36	49	96	100
03...	1223	355	--	14.0	3.83	794	--	29	41	96	100
03...	1224	355	--	15.1	3.11	1330	--	17	24	88	100
03...	1225	355	--	15.8	2.79	7690	--	3	3	55	100
03...	1226	215	13.4	3.10	4.30	314	--	64	71	98	100
03...	1228	215	--	6.70	4.28	331	--	64	74	100	--
03...	1230	215	--	9.60	3.78	448	--	49	59	96	100
03...	1232	215	--	11.2	3.59	413	--	47	57	95	100
03...	1233	215	--	12.1	3.28	587	--	37	46	91	100
03...	1234	215	--	12.6	3.39	611	--	35	43	92	100
SEP											
WATER TEMPERATURE, 24.5°C (1230-1320 HOURS); MEAN DAILY DISCHARGE, 41,700 ft ³ /s.											
07...	1230	620	21.2	4.90	4.91	190	--	62	76	100	--
07...	1231	620	--	10.6	4.70	220	--	60	80	100	--
07...	1232	620	--	15.1	3.94	262	--	52	67	99	100
07...	1233	620	--	17.7	3.72	331	--	38	55	98	100
07...	1234	620	--	19.1	3.18	458	--	33	49	99	100
07...	1235	620	--	20.0	3.18	611	--	26	38	96	100
07...	1236	620	--	20.4	3.28	641	--	22	35	95	100
07...	1240	540	18.0	4.20	5.35	302	--	59	73	98	100
07...	1241	540	--	9.00	5.13	444	--	39	55	98	100
07...	1242	540	--	12.9	4.48	430	--	29	48	97	100
07...	1243	540	--	15.0	4.15	485	--	24	43	96	100
07...	1244	540	--	16.2	3.83	570	--	25	44	97	100
07...	1245	540	--	17.0	3.72	855	--	16	31	95	100
07...	1250	450	16.8	--	--	484	9	20	--	--	--
07...	1300	345	14.8	3.40	4.70	264	48	60	97	100	--
07...	1301	345	--	7.40	4.48	317	40	54	98	100	--
07...	1302	345	--	10.6	4.25	447	29	45	96	100	--
07...	1303	345	--	12.3	3.83	455	25	42	96	100	--
07...	1304	345	--	13.3	3.28	514	22	37	95	100	--
07...	1305	345	--	13.9	3.28	427	17	34	98	100	--
07...	1310	175	11.6	2.70	3.94	201	67	79	97	100	--
07...	1311	175	--	5.80	3.94	242	53	64	97	100	--
07...	1312	175	--	8.30	3.72	335	38	50	96	100	--
07...	1313	175	--	9.70	3.18	420	30	41	89	100	--
07...	1314	175	--	10.4	3.07	255	45	55	98	100	--

PARTICLE SIZE DISTRIBUTION OF BED MATERIAL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM.							
			(80164)	(80165)	(80166)	(80167)	(80168)	(80169)	(80170)	(80171)
OCT	13...	5	0	1	24	98	100	--	--	--
APR	13...	5	0	1	29	95	99	100	--	--
MAY	25...	4	0	1	42	98	100	--	--	--
AUG	03...	5	0	1	34	98	100	--	--	--
SEP	07...	5	0	1	29	95	99	99	99	100

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE

LOCATION.--Lat 40°40'55", long 95°50'48", in NW1/4 NE1/4 sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 0.7 mi upstream from Waubonsie Highway Bridge at Nebraska City, and at mile 562.6.

DRAINAGE AREA.--410,000 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft NGVD, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--54 years, 36,060 ft³/s, 26,130,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s Apr. 19, 1952; maximum gage height, 27.66 ft Apr. 18, 1952; minimum discharge, 1,600 ft³/s Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft Dec. 24, 1960, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 121,000 ft³/s July 1, gage height, 21.21 ft; minimum daily, 31,400 ft³/s Dec. 31; minimum gage height, 6.59 ft Dec. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44300	49800	57900	32600	40400	72500	81700	53600	52400	119000	55400	49600
2	47200	50000	57200	33100	38700	74200	90000	66700	51900	114000	54500	49600
3	50400	49600	57300	33400	37600	75300	83800	81900	52900	103000	54900	49300
4	51300	49400	57500	33800	35900	75400	74000	90100	53900	94500	55200	48200
5	51000	49000	57900	34400	35600	73700	68600	84500	54700	87600	55300	47100
6	50400	49500	56400	35100	35500	75000	68600	75400	54500	82500	54200	48000
7	49800	50600	54800	36500	36400	86200	72200	72800	55500	78600	53100	48300
8	48800	50200	53200	38100	35900	94200	73400	73200	56300	76000	52500	48100
9	50100	50200	50400	38800	35800	89700	71600	70700	55900	73600	51200	47800
10	61900	49600	48900	39700	36000	80500	70900	66400	56300	69800	51000	48000
11	61200	52200	47800	40500	36700	72200	71600	62200	57000	67000	50200	47800
12	58500	57600	46000	39600	37400	68100	70300	59800	57300	64300	49600	47200
13	55700	63100	42500	38900	36900	64100	72700	59600	58800	62900	48800	48300
14	53200	66300	40700	39800	38800	60400	84900	58800	79700	61500	48600	48600
15	51200	64000	38700	40400	41900	61400	88600	67600	98600	60700	48700	48200
16	51100	62700	37100	39500	46300	67300	84600	56100	93800	60200	48500	49100
17	51100	60800	36700	38600	51000	69700	81200	53900	78600	59200	48500	49100
18	51500	59800	37000	38600	52700	63200	82500	55000	82900	58400	48300	48400
19	52100	60000	38000	37400	60500	59100	80200	63000	105000	58000	48200	48400
20	52100	61200	38200	37200	75000	57100	74800	64500	114000	57300	48100	50500
21	51800	61500	37900	37700	71400	56700	70200	64700	103000	57600	48200	51600
22	50900	61000	38200	37400	63100	55400	67400	62000	100000	57700	48600	50200
23	50900	61800	38200	38200	63100	54900	64500	60300	101000	57100	48900	49800
24	51000	62600	38400	38700	64300	53100	62400	59100	96800	56900	48100	49600
25	52100	60900	39800	38000	63600	52500	59900	59700	86400	57800	47800	49700
26	52300	59800	44400	38100	62500	55000	58100	58300	78700	57100	48100	50000
27	51900	58900	42000	38000	61700	58800	56500	58400	81800	55200	48700	49800
28	51500	58800	39300	37200	67000	58600	55200	56300	89000	55000	49600	50200
29	50600	59300	39500	38500	---	58400	53600	54700	96000	55800	49900	51300
30	50500	58900	32100	44200	---	60200	52600	52400	110000	56000	49400	51600
31	50300	---	31400	42900	---	65800	---	51400	---	56000	49600	---
TOTAL	1606700	1709100	1371800	1174900	1361700	2068700	2146600	1963100	2312700	2130700	1561700	1473400
MEAN	51830	56970	44250	37900	48630	66730	71550	63330	77090	68730	50380	49110
MAX	61900	66300	57500	44200	75000	94200	90000	90100	114000	119000	55400	51600
MIN	44300	49000	31400	32500	35500	52500	52600	51400	51900	55000	47800	47100
AC-FT	3187000	3390000	2721000	2330000	2701000	4103000	4258000	3894000	4587000	4226000	3098000	2922000
CAL YR 1982 TOTAL	15645600			MEAN 42860		MAX 97500	MIN 11500	AC-FT 31030000				
WTR YR 1983 TOTAL	20881100			MEAN 57210		MAX 119000	MIN 31400	AC-FT 41420000				

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1951 to current year. Daily sediment loads August 1957 to September 1971 in reports of Corps of Engineers.

REMARKS.--Samples for particle size distribution were collected from boat cross-section 0.7 mi upstream from gage.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1951 to September 1976.
 WATER TEMPERATURES: May 1951 to September 1976.
 SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 994 micromhos Dec. 17, 1962; minimum daily, 273 micromhos June 17, 1964.
 WATER TEMPERATURES: Maximum daily, 31°C July 26, 1977; minimum, 0.0°C on many days during winter periods.
 SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,220 mg/L May 19, 1974; minimum daily mean, 137 mg/L Jan. 14, 1975.
 SEDIMENT LOADS: Maximum daily, 1,590,000 tons May 19, 1974; minimum daily, 4,050 tons Jan. 17, 1972.

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET) (81903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (81904)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. X FINER THAN .004 MM (70338)
OCT							
12...	WATER TEMPERATURE, 14.0°C (1415-1510 HOURS); DISCHARGE 58,800 ft ³ /s.						
12...	1415	495	18.0	4.20	4.70	882	--
12...	1416	495	--	9.00	4.59	875	--
12...	1417	495	--	12.9	4.00	870	--
12...	1418	495	--	15.0	3.72	925	--
12...	1419	495	--	16.2	3.42	949	--
12...	1420	495	--	17.0	3.50	1010	--
12...	1425	375	16.4	3.80	6.58	978	--
12...	1426	375	--	8.20	6.54	1080	--
12...	1427	375	--	11.7	4.17	1250	--
12...	1428	375	--	13.7	3.63	1410	--
12...	1429	375	--	14.8	3.20	1400	--
12...	1430	375	--	15.4	2.74	1540	--
12...	1435	280	20.0	4.60	6.67	974	--
12...	1436	280	--	10.0	5.61	1300	--
12...	1437	280	--	14.3	4.80	1860	--
12...	1438	280	--	16.7	4.30	1970	--
12...	1439	280	--	17.4	3.81	2390	--
12...	1440	280	--	18.8	3.61	--	--
12...	1445	190	19.2	--	--	1850	23
12...	1451	90.0	20.0	4.60	5.95	961	--
12...	1452	90.0	--	10.0	5.50	919	--
12...	1453	90.0	--	14.3	4.65	982	--
12...	1454	90.0	--	16.7	4.33	1050	--
12...	1455	90.0	--	18.0	4.15	1130	--
12...	1456	90.0	--	18.8	4.26	1140	--
APR							
12...	WATER TEMPERATURE, 8.0°C (1410-1515 HOURS); DISCHARGE, 69,900 ft ³ /s.						
12...	1410	470	17.8	4.10	5.61	560	--
12...	1411	470	--	8.90	5.72	581	--
12...	1412	470	--	12.7	4.72	648	--
12...	1413	470	--	14.8	4.57	754	--
12...	1414	470	--	16.0	4.39	811	--
12...	1415	470	--	16.8	3.09	776	--
12...	1420	355	20.6	4.80	6.52	677	--
12...	1422	355	--	10.3	6.43	981	--
12...	1424	355	--	14.7	5.67	1110	--
12...	1426	355	--	17.2	4.09	1600	--
12...	1428	355	--	18.5	3.24	2960	--
12...	1430	355	--	19.4	2.96	4590	--
12...	1433	260	20.6	--	--	1470	15
12...	1439	170	22.6	5.20	6.52	878	--

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued

WATER-QUALITY RECORDS

PARTICLE SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM (70335)	SED. SUSP. SIEVE DIAM. % FINER THAN 2.00 MM (70336)
	OCT						
12...	89	93	99	100	--	--	--
12...	90	94	99	100	--	--	--
12...	90	95	99	100	--	--	--
12...	87	92	99	100	--	--	--
12...	84	90	98	100	--	--	--
12...	83	89	97	100	--	--	--
12...	80	87	99	100	--	--	--
12...	73	80	99	100	--	--	--
12...	63	74	100	--	--	--	--
12...	55	62	98	100	--	--	--
12...	57	66	97	100	--	--	--
12...	51	60	99	100	--	--	--
12...	77	84	100	--	--	--	--
12...	59	67	96	100	--	--	--
12...	41	49	75	94	100	--	--
12...	38	44	76	100	--	--	--
12...	32	38	69	100	--	--	--
12...	--	--	--	--	--	--	--
12...	40	--	--	--	--	--	--
12...	78	85	99	100	--	--	--
12...	80	86	100	--	--	--	--
12...	75	82	98	100	--	--	--
12...	71	79	97	100	--	--	--
12...	65	73	93	100	--	--	--
12...	65	74	93	100	--	--	--
APR							
12...	83	91	99	100	--	--	--
12...	80	86	96	100	--	--	--
12...	75	82	95	100	--	--	--
12...	62	71	86	100	--	--	--
12...	58	66	83	99	100	--	--
12...	60	68	83	100	--	--	--
12...	71	81	99	100	--	--	--
12...	53	62	94	100	--	--	--
12...	45	55	88	100	--	--	--
12...	31	38	73	97	100	--	--
12...	17	21	66	92	--	97	100
12...	13	15	49	90	--	99	100
12...	36	--	--	--	--	--	--
12...	60	72	95	100	--	--	--

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE ATION, TOTAL (FEET) (01903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (01904)	SEDI- MENT, SUS- PENDED (MG/L) (01914)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
APR												
12...	1440	170	--	11.3	6.39	944	--	56	70	96	100	--
12...	1441	170	--	16.1	5.65	1410	--	38	51	78	100	--
12...	1442	170	--	18.8	4.85	1370	--	40	52	80	100	--
12...	1443	170	--	20.3	4.35	1990	--	28	39	70	95	100
12...	1444	170	--	21.3	3.83	2120	--	25	33	66	93	100
12...	1445	80.0	24.6	5.70	6.21	662	--	78	89	100	--	--
12...	1446	80.0	--	12.3	5.78	796	--	66	79	96	100	--
12...	1447	80.0	--	17.6	5.13	969	--	55	70	90	100	--
12...	1448	80.0	--	20.5	4.65	1200	--	45	59	80	100	--
12...	1449	80.0	--	22.1	3.94	1360	--	42	52	72	100	--
12...	1500	80.0	--	23.2	3.52	1590	--	37	46	63	97	100
MAY												
24...	WATER TEMPERATURE, 18.0°C (1400-1440 HOURS); DISCHARGE, 59,400 ft ³ /s.											
24...	1400	450	15.6	3.60	5.45	378	--	71	86	100	--	--
24...	1401	450	--	7.80	4.80	390	--	69	80	100	--	--
24...	1402	450	--	11.1	4.70	453	--	59	72	100	--	--
24...	1404	450	--	13.0	4.15	634	--	44	59	99	100	--
24...	1406	450	--	14.0	4.15	852	--	33	42	95	100	--
24...	1408	450	--	14.7	3.94	1130	--	26	37	99	100	--
24...	1410	330	16.0	3.70	7.52	362	--	75	89	100	--	--
24...	1411	330	--	8.00	6.76	432	--	66	80	100	--	--
24...	1412	330	--	11.4	6.76	601	--	49	68	100	--	--
24...	1413	330	--	13.3	6.02	1120	--	26	50	100	--	--
24...	1414	330	--	14.4	5.67	1520	--	20	43	100	--	--
24...	1415	330	--	15.1	5.24	3520	--	8	24	100	--	--
24...	1420	235	17.8	--	--	1180	9	24	--	--	--	--
24...	1426	160	20.0	4.60	8.94	403	--	68	78	100	--	--
24...	1427	160	--	10.0	8.07	443	--	59	73	100	--	--
24...	1428	160	--	14.3	7.63	650	--	40	52	100	--	--
24...	1429	160	--	16.7	7.19	930	--	30	40	100	--	--
24...	1430	160	--	18.0	6.65	1470	--	17	29	100	--	--
24...	1431	160	--	18.8	6.11	3030	--	9	16	98	100	--
24...	1432	90.0	21.0	4.90	6.97	410	--	65	75	98	98	100
24...	1433	90.0	--	10.5	7.08	489	--	55	65	100	--	--
24...	1434	90.0	--	15.0	7.08	669	--	41	52	100	--	--
24...	1435	90.0	--	17.5	6.32	970	--	29	39	100	--	--
24...	1436	90.0	--	19.8	6.00	2700	--	11	22	96	100	--
24...	1437	90.0	--	19.8	6.00	2700	--	11	22	96	100	--
24...	1438	90.0	--	20.2	5.67	1580	--	19	30	100	--	--
AUG												
02...	WATER TEMPERATURE, 28.0°C (1235-1320 HOURS); DISCHARGE, 54,300 ft ³ /s.											
02...	1235	550	19.4	4.50	4.59	244	--	82	90	100	--	--

MISSOURI RIVER MAIN STEM
06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOCATION, TOTAL (FEET) (81903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (81904)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. FALL DIAM. X FINER THAN (70338)	
AUG								
02...	1236	550	--	9.70	4.26	268	--	
02...	1237	550	--	13.9	3.94	300	--	
02...	1238	550	--	16.2	3.83	313	--	
02...	1239	550	--	17.5	3.39	345	--	
02...	1240	550	--	18.3	2.96	335	--	
02...	1245	425	17.8	4.10	5.89	310	--	
02...	1246	425	--	8.90	5.35	458	--	
02...	1247	425	--	12.7	4.59	576	--	
02...	1248	425	--	14.8	4.48	674	--	
02...	1249	425	--	16.0	4.15	768	--	
02...	1250	425	--	16.8	3.83	846	--	
02...	1253	325	15.4	--	--	683	12	
02...	1259	210	16.4	3.80	6.52	329	--	
02...	1300	210	--	8.20	5.89	449	--	
02...	1301	210	--	11.7	5.56	687	--	
02...	1302	210	--	13.7	5.35	670	--	
02...	1303	210	--	14.8	5.13	758	--	
02...	1304	210	--	15.4	5.13	943	--	
02...	1305	110	19.8	4.60	5.67	217	--	
02...	1306	110	--	9.90	5.02	260	--	
02...	1307	110	--	14.1	5.02	294	--	
02...	1308	110	--	16.5	4.26	331	--	
02...	1309	110	--	17.8	4.59	313	--	
02...	1310	110	--	18.6	3.72	319	--	
SEP								
06...	WATER TEMPERATURE, 26.0°C (1240-1330 HOURS); DISCHARGE, 47,700 ft ³ /s..							
06...	1240	560	20.0	4.60	4.48	182	--	
06...	1241	560	--	10.0	4.15	207	--	
06...	1242	560	--	14.3	3.50	191	--	
06...	1243	560	--	16.7	3.50	209	--	
06...	1244	560	--	18.0	3.28	233	--	
06...	1245	560	--	18.8	2.85	303	--	
06...	1250	425	16.8	3.90	5.67	304	--	
06...	1251	425	--	8.40	5.35	452	--	
06...	1252	425	--	12.0	4.70	667	--	
06...	1253	425	--	14.0	3.83	1100	--	
06...	1254	425	--	15.1	3.18	1630	--	
06...	1255	425	--	15.8	2.74	1760	--	
06...	1300	325	13.8	--	--	681	8	
06...	1309	225	16.4	3.80	6.21	329	--	
06...	1310	225	--	8.20	5.78	471	--	
SEDIMENTATION DATA								
DATE		SED. SUSP. FALL DIAM. X FINER THAN (70342)	SED. SUSP. FALL DIAM. X FINER THAN (70343)	SED. SUSP. FALL DIAM. X FINER THAN (70344)	SED. SUSP. FALL DIAM. X FINER THAN (70345)	SED. SUSP. FALL DIAM. X FINER THAN (70346)	SED. SUSP. FALL DIAM. X FINER THAN (70335)	SED. SUSP. FALL DIAM. X FINER THAN (70336)
AUG								
02...	77	84	100	--	--	--	--	--
02...	70	81	98	100	--	--	--	--
02...	68	76	98	100	--	--	--	--
02...	67	76	98	100	--	--	--	--
02...	63	71	99	100	--	--	--	--
02...	67	79	100	--	--	--	--	--
02...	49	65	100	--	--	--	--	--
02...	40	52	98	100	--	--	--	--
02...	34	48	94	100	--	--	--	--
02...	29	42	89	100	--	--	--	--
02...	26	38	87	100	--	--	--	--
02...	27	--	--	--	--	--	--	--
02...	62	71	98	100	--	--	--	--
02...	51	64	99	100	--	--	--	--
02...	34	48	98	100	--	--	--	--
02...	32	47	98	100	--	--	--	--
02...	31	41	92	100	--	--	--	--
02...	24	36	95	100	--	--	--	--
02...	93	97	100	--	--	--	--	--
02...	79	85	99	100	--	--	--	--
02...	70	75	98	100	--	--	--	--
02...	64	72	98	100	--	--	--	--
02...	64	73	94	100	--	--	--	--
02...	64	76	99	100	--	--	--	--
SEP								
06...	84	94	97	100	--	--	--	--
06...	74	87	100	--	--	--	--	--
06...	81	92	100	--	--	--	--	--
06...	76	88	100	--	--	--	--	--
06...	66	78	98	100	--	--	--	--
06...	52	66	94	100	--	--	--	--
06...	53	66	100	--	--	--	--	--
06...	41	59	98	100	--	--	--	--
06...	25	35	91	99	100	--	--	--
06...	15	23	86	98	--	100	--	--
06...	12	23	70	92	--	98	100	--
06...	10	21	74	100	--	--	--	--
06...	19	--	--	--	--	--	--	--
06...	50	63	98	100	--	--	--	--
06...	37	53	97	100	--	--	--	--

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH AT SAMPLE LOC- ATION, TOTAL (FEET) (B1903)	SAM- PLING DEPTH (FEET) (00003)	STREAM VELOC- ITY, POINT (FPS) (81904)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM (70346)
SEP											
06...	1311	225	--	11.7	5.24	604	28	44	96	100	--
06...	1312	225	--	13.7	5.02	859	19	30	95	100	--
06...	1313	225	--	14.8	4.48	943	17	27	93	100	--
06...	1314	225	--	15.4	4.59	1360	12	19	88	100	--
06...	1315	100	18.2	4.20	5.24	213	70	87	100	--	--
06...	1316	100	--	9.10	4.80	219	69	82	100	--	--
06...	1317	100	--	13.0	4.04	265	60	73	97	100	--
06...	1318	100	--	15.2	3.74	309	48	62	93	100	--
06...	1319	100	--	16.4	2.85	307	48	62	90	100	--
06...	1320	100	--	17.1	2.85	369	42	56	80	98	100

PARTICLE SIZE DISTRIBUTION OF BED MATERIAL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	NUMBER OF SAM- PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT											
12...	1506	5	--	0	14	46	74	89	98	100	--
APR											
12...	1515	5	--	0	6	29	56	80	93	98	100
AUG											
02...	1320	5	0	1	14	42	67	90	95	99	100
SEP											
06...	1330	5	--	0	16	46	64	89	96	100	--

NISHNABOTNA RIVER BASIN

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24", long 95°22'17", in NW1/4 NE1/4 sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi west of Hancock school, 3.0 mi downstream from Jim Creek, 59.6 mi upstream from confluence with East Nishnabotna River, and at mile 75.1 mi above mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft NGVD. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height satellite telemeters at station.

AVERAGE DISCHARGE.--24 years, 272 ft³/s, 6.07 in/yr, 197,100 acre-ft/yr; median of yearly mean discharges, 230 ft³/s, 5.1 in/yr, 167,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s Sept. 13, 1972, gage height, 22.12 ft; minimum daily, 2.2 ft³/s Feb. 8, 9, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,310 ft³/s Feb. 20, gage height, 11.70 ft at 0415 hours, no other peak above base of 4,000 ft³/s; minimum daily, 73 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	142	269	300	250	1170	2150	846	656	1130	319	124
2	199	135	273	400	200	1160	1630	1680	657	1340	302	116
3	248	128	260	400	150	1130	1460	1790	651	1020	286	110
4	185	124	242	400	200	1150	1270	1550	624	924	278	103
5	156	124	268	350	250	1300	1160	1300	617	861	266	99
6	145	127	281	300	300	1530	1230	1220	619	832	257	103
7	136	132	271	250	350	2470	1220	1230	599	793	249	102
8	134	129	248	250	400	1670	1130	1090	589	754	239	94
9	151	131	150	250	300	1320	1240	978	577	719	227	87
10	167	137	120	250	260	1180	1620	929	782	690	218	82
11	142	485	120	250	220	1080	1440	877	593	660	207	76
12	130	1080	140	300	150	1010	1560	866	600	625	190	75
13	128	503	160	350	150	1000	1860	872	628	603	186	73
14	124	366	200	300	200	973	1740	837	1820	582	186	77
15	121	333	250	250	300	1080	1710	820	994	564	183	109
16	111	321	220	200	400	1300	1700	780	830	546	170	117
17	108	303	200	180	600	1130	1520	771	791	530	157	104
18	109	299	200	160	1000	1030	1410	824	1520	508	147	93
19	117	309	250	160	2960	966	1310	953	1300	493	136	86
20	591	310	317	180	5640	918	1220	894	1040	471	131	244
21	319	279	280	200	2540	867	1150	826	1320	443	225	354
22	223	264	274	220	2190	827	1090	815	984	421	236	158
23	196	248	288	220	2170	799	1030	774	908	406	174	126
24	182	236	315	220	1480	788	954	746	870	397	162	113
25	171	237	447	220	1190	776	925	764	834	402	154	106
26	161	270	484	200	1070	812	889	723	803	381	144	97
27	154	249	361	180	1430	706	836	709	807	377	148	92
28	166	272	918	180	1450	690	820	696	1890	389	142	90
29	162	285	500	200	---	860	798	674	1620	386	136	102
30	149	274	400	300	---	898	777	663	1230	364	128	101
31	144	---	300	300	---	1550	---	659	---	337	129	---
TOTAL	5392	8232	9006	7920	27800	34140	38849	29166	27753	18948	6112	3413
MEAN	174	274	291	255	993	1101	1295	941	925	611	197	114
MAX	591	1080	918	400	5640	2470	2180	1790	1890	1340	319	354
MIN	108	124	120	160	150	690	777	659	577	337	128	73
CFSM	.29	.45	.48	.42	1.63	1.81	2.13	1.55	1.52	1.00	.32	.19
IN.	.33	.50	.55	.48	1.70	2.09	2.37	1.78	1.70	1.16	.37	.21
AC-FT	10700	16330	17860	15710	55140	67720	77060	57850	55050	37580	12120	6770
CAL YR 1982	TOTAL	132638	MEAN 363	MAX 8640	MIN 14	CFSM .60	IN 8.10	AC-FT 263100				
WTR YR 1983	TOTAL	216731	MEAN 594	MAX 5640	MIN 73	CFSM .98	IN 13.24	AC-FT 429900				

NISHNABOTNA RIVER BASIN

06808600 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE1/4 NE1/4 sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on State Highway 184, 0.3 mi downstream from Deer Creek, 0.5 mi west of Randolph, and 16.0 mi upstream from confluence with East Nishnabotna River and at mile 31.5 above mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi².

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft NGVD, unadjusted. Prior to Aug. 25, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--35 years, 555 ft³/s, 5.68 in/yr, 402,100 acre-ft/yr; median of yearly mean discharges, 480 ft³/s, 4.9 in/yr, 348,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,500 ft³/s June 21, 1967, gage height, 22.60 ft; maximum gage height, 24.8 ft Mar. 5, 1949, from graph based on gage readings (backwater from ice); minimum daily discharge, 10 ft³/s Dec. 17-21, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 20	1445	7,550	16.45	May 19	0315	*8,540	*17.15

Minimum daily discharge, 229 ft³/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	613	388	462	700	633	1600	3010	1920	1140	1680	689	315
2	598	379	462	1000	442	1390	2850	3320	1150	1610	653	308
3	600	370	450	1000	350	1390	2360	3040	1130	1620	623	297
4	601	362	426	900	500	1400	2160	2750	1090	1390	604	287
5	539	362	526	800	700	1530	2030	2260	1100	1300	593	277
6	499	362	600	750	900	1900	2120	2080	1090	1240	590	268
7	463	362	517	700	1020	2600	2060	1990	1020	1190	630	258
8	443	362	462	650	1050	2550	2000	1930	953	1160	571	252
9	443	366	400	621	948	1820	2140	1770	919	1130	545	246
10	422	366	350	739	859	1590	2560	1680	933	1100	525	239
11	424	445	300	755	699	1480	2510	1620	1020	1070	502	233
12	410	993	397	593	417	1410	2380	1600	898	1040	468	231
13	390	1180	657	542	421	1370	2640	1580	916	1030	452	229
14	385	588	642	615	684	1350	2740	1570	2240	1000	444	232
15	382	583	658	588	1280	1450	2630	1530	1920	979	440	252
16	373	555	503	535	1370	1670	2520	1470	1280	954	419	276
17	373	541	498	496	1930	1700	2420	1460	1170	942	392	278
18	366	521	473	450	1880	1540	2250	1880	3590	924	373	258
19	369	521	471	400	3410	1450	2130	4650	2490	894	356	252
20	380	521	441	450	6080	1400	2020	2030	1830	864	345	269
21	687	510	439	502	3530	1330	1930	1750	1560	833	403	305
22	538	483	434	513	2380	1300	1870	1670	1670	795	438	426
23	462	466	435	513	2390	1260	1790	1490	1380	771	447	322
24	429	434	472	506	2200	1250	1700	1400	1310	767	383	297
25	412	421	541	501	1610	1230	1640	1360	1260	773	352	292
26	397	432	550	450	1410	1600	1590	1320	1230	767	334	283
27	386	427	600	400	1350	1860	1530	1430	1320	736	332	280
28	435	494	862	443	1660	1530	1490	1250	1300	725	325	278
29	442	489	660	494	---	1670	1460	1270	3080	899	325	281
30	407	481	500	819	---	1900	1430	1180	2320	836	325	281
31	392	---	500	882	---	2340	---	1160	---	720	322	---
TOTAL	14060	14864	15688	19307	42103	49860	63960	57420	44309	31739	14200	8302
MEAN	454	495	506	623	1504	1608	2132	1852	1477	1024	458	277
MAX	687	1180	862	1000	6080	2600	3010	4650	3590	1680	689	426
MIN	366	362	300	400	350	1230	1430	1160	898	720	322	229
CFSM	.34	.37	.38	.47	1.13	1.21	1.61	1.40	1.11	.77	.35	.21
IN.	.39	.42	.44	.54	1.18	1.40	1.79	1.61	1.24	.89	.40	.23
AC-FT	27890	29480	31120	38300	83510	98900	126900	113900	87890	62950	28170	16470

CAL YR 1982 TOTAL 321610 MEAN 881 MAX 13600 MIN 90 CFSM .66 IN 9.02 AC-FT 637900
WTR YR 1983 TOTAL 375812 MEAN 1030 MAX 6080 MIN 229 CFSM .78 IN 10.54 AC-FT 745400

NISHNABOTNA RIVER BASIN

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'46", long 95°04'36", in NW1/4 NW1/4 sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi upstream from Turkey Creek, 5.2 mi southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi upstream from confluence with West Nishnabotna River, and at mile 84.6 above mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi².

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft NGVD. Prior to Oct. 1, 1970, at site 2.2 mi upstream at datum 5.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--23 years, 213 ft³/s, 6.63 in/yr, 154,300 acre-ft/yr; median of yearly mean discharges, 220 ft³/s, 6.9 in/yr, 159,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s Sept. 12, 1972, gage height, 22.81 ft; minimum daily, 2.5 ft³/s July 10, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 2, 1938 reached a stage of 22.49 ft, from floodmark, discharge, 34,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 19	2100	*3,580	*9.64	June 28	1045	3,160	9.13
May 1	2145	3,290	9.20				

Minimum daily discharge, 63 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	101	220	416	240	488	2000	1230	470	568	168	83
2	242	100	275	381	180	492	1430	1940	473	554	161	78
3	278	98	263	352	150	494	1190	1940	455	498	153	77
4	160	96	237	345	180	502	985	1260	409	423	148	73
5	144	93	375	329	220	591	898	1040	398	385	142	72
6	145	93	707	317	300	1100	985	941	395	366	139	83
7	125	93	423	336	300	1650	999	1300	365	350	134	100
8	120	91	300	304	280	905	875	843	352	329	126	103
9	161	91	200	301	260	685	986	775	332	314	116	98
10	146	91	150	709	240	613	1340	722	466	306	109	92
11	123	686	150	448	220	573	1210	693	352	293	105	87
12	113	901	200	310	220	552	1260	703	348	277	94	76
13	109	339	250	412	250	558	1810	749	336	268	91	74
14	103	297	332	405	600	562	1500	687	530	258	91	74
15	100	267	279	301	1640	782	1290	676	423	254	90	94
16	94	261	270	250	1040	1170	1190	616	355	244	89	88
17	93	246	267	200	1430	863	1010	606	339	242	87	77
18	93	240	256	150	942	757	930	655	444	238	86	72
19	94	243	247	200	1990	693	861	1240	409	232	82	70
20	171	240	241	200	1760	650	792	912	362	235	82	110
21	140	218	238	250	925	618	747	788	342	225	120	104
22	122	207	238	250	848	597	726	783	314	215	118	82
23	116	200	238	220	750	592	702	685	298	205	93	77
24	112	190	270	200	596	588	663	864	288	200	93	76
25	107	205	566	180	498	583	651	825	285	208	89	73
26	102	219	440	160	472	598	631	558	281	200	83	67
27	101	187	365	120	502	520	590	598	285	179	81	67
28	114	233	1670	150	516	581	571	522	1530	184	83	66
29	134	239	780	600	---	740	557	503	1520	240	78	64
30	113	223	562	1050	---	826	537	477	746	209	78	63
31	105	---	470	378	---	2080	---	473	---	179	87	---
TOTAL	4007	6788	11479	10224	17549	23003	29916	26544	13902	8073	3296	2420
MEAN	129	226	370	330	627	742	997	856	463	286	106	80.7
MAX	278	901	1670	1050	1990	2080	2000	1940	1530	568	168	110
MIN	93	91	150	120	150	488	537	473	281	179	78	63
CFSM	.30	.52	.85	.76	1.44	1.70	2.29	1.96	1.06	.66	.24	.19
IN.	.34	.68	.98	.87	1.50	1.96	2.55	2.26	1.19	.76	.28	.21
AC-FT	7950	13460	22770	20280	34810	45630	59340	52650	27570	17610	6540	4800
CAL YR 1982 TOTAL	111692		MEAN 306	MAX 5370	MIN 20	CFSM .70	IN 9.53	AC-FT 221500				
WTR YR 1983 TOTAL	158006		MEAN 433	MAX 2080	MIN 63	CFSM .99	IN 13.48	AC-FT 313400				

NISHNABOTNA RIVER BASIN

06809600 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'31", long 95°14'29", in NW1/4 SE1/4 sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on left bank on downstream side of Coolbaugh Street bridge in Red Oak, and 0.2 mi upstream from Red Oak Creek, 38.0 mi upstream from confluence with West Nishnabotna River, and at mile 53.6 above mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi².

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft NGVD. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft higher. May 29, 1936, to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft gage height July 30, 1939, to Nov. 13, 1952, and Nov. 14, 1952, to June 13, 1966, water-stage recorder, all at site 0.5 mi upstream at datum 5.00 ft higher. June 14, 1966, to Sept. 30, 1969, at present site at datum 5.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--53 years (water years 1919-24, 1937-83), 379 ft³/s, 5.76 in/yr, 274,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s Sept. 13, 1972, gage height, 27.43 ft; maximum gage height, 28.23 ft June 13, 1947, present datum; minimum daily discharge, 6 ft³/s Aug. 18, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	1145	4,510	12.24	May 2	0445	5,190	12.91
Feb. 20	0515	*6,060	*13.71				

Minimum daily discharge, 107 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	216	335	784	650	1010	3630	1380	877	1240	360	169
2	292	211	359	735	481	955	2370	3900	884	1110	340	153
3	463	206	426	695	350	944	2090	2990	876	1010	326	144
4	349	203	373	659	400	927	1730	2630	827	882	320	132
5	282	201	394	666	600	984	1540	2010	795	791	320	125
6	279	202	1050	623	800	1240	1680	1770	805	746	306	142
7	263	205	778	674	918	2600	1710	1980	771	707	303	143
8	243	204	673	672	770	1860	1560	1730	734	674	292	164
9	251	197	483	645	568	1350	1660	1450	710	646	276	162
10	298	203	380	1100	568	1140	2410	1360	817	619	266	156
11	258	244	350	1350	533	1020	2030	1280	798	593	251	144
12	236	1570	242	748	528	941	1950	1240	719	567	236	134
13	229	740	328	722	583	917	2810	1300	739	541	233	120
14	222	462	441	851	1360	897	2540	1250	879	516	229	119
15	226	404	526	739	3050	908	2270	1240	1070	511	224	135
16	238	380	422	619	2390	1670	2030	1130	803	516	215	171
17	216	369	426	644	2750	1650	1860	1100	748	486	212	155
18	212	352	454	500	1910	1260	1690	1170	1130	483	201	129
19	214	355	445	450	3480	1130	1550	1610	1160	460	179	115
20	230	375	428	500	3770	1020	1460	1870	913	449	182	145
21	300	345	398	564	2170	967	1370	1420	830	435	196	196
22	258	308	422	581	1770	910	1310	1360	757	416	236	170
23	246	300	451	588	1680	872	1260	1260	712	406	219	138
24	237	274	422	564	1420	859	1180	1140	687	397	191	126
25	223	246	581	536	1200	843	1130	1720	671	403	191	125
26	219	311	861	400	1060	914	1090	1250	649	403	179	122
27	217	285	584	360	1030	1030	1030	1090	816	385	170	117
28	243	330	2740	450	1060	885	989	1030	1660	376	164	113
29	267	371	1620	736	---	1250	969	979	3180	506	164	112
30	258	352	1130	2310	---	1450	940	933	1690	480	158	107
31	231	---	894	984	---	2570	---	900	---	394	155	---
TOTAL	7994	10421	19316	22439	37949	36973	51838	47472	28607	18148	7294	4183
MEAN	258	347	623	724	1355	1193	1728	1531	954	585	235	139
MAX	463	1570	2740	2310	3770	2600	3630	3900	3180	1240	360	196
MIN	212	197	242	350	350	843	940	900	649	376	155	107
CFSM	.29	.39	.70	.81	1.52	1.33	1.93	1.71	1.07	.65	.26	.16
IN.	.33	.43	.80	.93	1.58	1.54	2.16	1.98	1.19	.76	.30	.17
AC-FT	15860	20670	38310	44510	75270	73340	102800	94160	56740	36000	14470	8300
CAL YR 1982	TOTAL	223308	MEAN 612	MAX 8850	MIN 52	CFSM .69	IN 9.29	AC-FT 442900				
WTR YR 1983	TOTAL	292634	MEAN 802	MAX 3900	MIN 107	CFSM .90	IN 12.18	AC-FT 580400				

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°37'57", long 95°37'32", in SW1/4 SE1/4 sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi northeast of Hamburg, and at mile 13.8.

DRAINAGE AREA.--2,806 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft NGVD. See WSP 1730 for history of changes prior to prior to Nov. 16, 1950.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station. Corps of Engineers rain-gage and gage-height satellite telemeter at station.

AVERAGE DISCHARGE.--56 years (water years 1923, 1929-83), 1,057 ft³/s, 5.12 in/yr, 765,800 acre-ft/yr; median of yearly mean discharges, 940 ft³/s, 4.5 in/yr, 681,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,500 ft³/s June 24, 1947, gage height, 26.03 ft, from flood-mark, present site and datum; maximum gage height, 27.46 ft Mar. 7, 1979 (back-water from ice); minimum daily discharge, 4.5 ft³/s Aug. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 15	2100	9,350	18.98	June 18	1730	9,040	19.78
Feb. 20	1500	*12,700	*20.88	June 30	0030	10,800	20.81

Minimum daily discharge, 480 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1350	891	1170	2000	1840	3220	7340	3020	2600	4470	1380	653		
2	1280	874	1260	2200	1500	2970	6860	7490	2550	3700	1300	643		
3	1280	852	1170	2200	1000	2740	5390	6540	2570	3550	1220	629		
4	1430	837	1190	2000	1000	2680	4840	6550	2480	3100	1170	605		
5	1290	840	1310	2000	1500	2810	4430	5240	2450	2790	1130	578		
6	1160	842	1590	1800	2000	3100	4480	4580	2470	2610	1120	563		
7	1120	848	1930	1800	2500	3980	4490	4270	2350	2500	1230	566		
8	1080	843	1530	1700	2300	5520	4370	4320	2270	2400	1120	554		
9	1100	837	1300	1700	2100	4040	4430	3910	2190	2300	1060	542		
10	1040	834	1000	2500	1900	3350	5110	3580	2150	2210	1020	525		
11	1080	944	800	3020	1700	3040	5690	3450	2580	2160	977	529		
12	1030	1440	900	1980	1500	2860	5040	3350	2200	2100	941	506		
13	998	2860	1300	1680	1300	2760	5310	3290	2140	2030	914	483		
14	982	1700	1400	1910	3000	2710	6380	3300	3570	1960	901	480		
15	966	1360	1500	1770	7000	2700	5730	3230	3630	1900	907	520		
16	938	1300	1300	1470	5600	3340	5310	3110	3050	1850	873	547		
17	917	1260	1200	1340	5130	3910	4970	2980	2650	1810	843	597		
18	901	1230	1200	1200	5430	3610	4620	3060	6260	1770	826	570		
19	893	1210	1200	1100	5800	3190	4380	5810	5630	1730	808	531		
20	909	1220	1200	1300	9860	3020	4130	4640	4090	1680	745	570		
21	1060	1190	1200	1400	7520	2840	3930	4160	3430	1620	826	594		
22	1160	1130	1200	1400	5570	2690	3780	3790	3310	1560	941	747		
23	990	1090	1200	1400	4920	2590	3640	3540	2980	1500	1010	655		
24	946	1060	1290	1300	4680	2510	3460	3280	2800	1460	922	586		
25	926	1020	1360	1200	3860	2480	3290	3150	2670	1450	809	566		
26	898	1020	1450	1100	3370	3120	3180	3570	2620	1440	762	552		
27	883	1050	1680	1040	3080	4060	3080	3360	3270	1410	733	542		
28	1000	1140	2680	1000	3090	3750	2970	3030	3280	1360	698	528		
29	1070	1220	3210	1200	---	3700	2890	2900	7640	1670	695	531		
30	964	1210	2030	1500	---	4120	2820	2710	7870	1630	674	521		
31	931	---	1800	2820	---	4890	---	2620	---	1490	666	---		
TOTAL	32572	34152	44550	52030	100050	102300	136340	121830	99750	65210	29221	17013		
MEAN	1051	1138	1437	1678	3573	3300	4545	3930	3325	2104	943	567		
MAX	1430	2860	3210	3020	9860	5520	7340	7490	7870	4470	1380	747		
MIN	883	834	800	1000	1000	2480	2820	2620	2140	1360	666	480		
CFSM	.38	.41	.51	.60	1.27	1.18	1.62	1.40	1.19	.75	.34	.20		
IN.	.43	.45	.59	.69	1.33	1.36	1.81	1.62	1.32	.86	.39	.23		
AC-FT	64610	67740	88360	103200	198400	202900	270400	241600	197900	129300	57960	33750		
CAL YR 1982	TOTAL	714471	MEAN	1957	MAX	20500	MIN	170	CFSM	.70	IN	9.47	AC-FT	1417000
WTR YR 1983	TOTAL	835018	MEAN	2288	MAX	9860	MIN	480	CFSM	.82	IN	11.07	AC-FT	1656000

NISHNABOTNA RIVER BASIN

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1979 to September 1981.
WATER TEMPERATURES: April 1979 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 815 micromhos Sept. 16,18, 19, 28,30, 1979; minimum daily, 155 micromhos, July 20, 1981.
WATER TEMPERATURES: Maximum daily, 32.0°C July 14, 1980; minimum daily, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED SATURATION (PERCENT) (00301)	BAROMETRIC PRESURE (MM HG) (00025)	COLIFORM, FECAL, 0.7 UM-MF OF 100 ML (31625)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS AS CaCO3 (MG/L) (00900)
NOV , 1982												
02...	1100	810	575	8.3	11.0	25	9.4	89	--	110	390	260
FEB , 1983												
22...	1230	5650	380	8.0	3.0	700	10.4	80	737	7800	K120000	170
MAY												
23...	1230	3480	550	7.9	15.0	150	7.7	80	728	3200	9200	260
JUL												
22...	1240	1440	565	8.3	27.0	66	6.2	81	737	2200	630	280

DATE	HARDNESS, NONCARBONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED AS Ca (MG/L) (00915)	MAGNESIUM, DIS-SOLVED AS Mg (MG/L) (00925)	SODIUM, DIS-SOLVED AS Na (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED AS K (MG/L) (00935)	ALKALINITY LAB AS CaCO3 (MG/L) (90410)	SULFATE DIS-SOLVED AS SO4 (MG/L) (00945)	CHLORIDE, DIS-SOLVED AS Cl (MG/L) (00940)	FLUORIDE, DIS-SOLVED AS F (MG/L) (00950)	SILICA, DIS-SOLVED AS SiO2 (MG/L) (00955)
NOV , 1982												
02...	7	68	21	14	10	.4	3.1	250	38	16	.40	16
FEB , 1983												
22...	21	45	13	9.5	11	.3	6.5	145	24	9.6	.30	11
MAY												
23...	64	69	22	11	8	.3	2.4	200	36	18	.40	15
JUL												
22...	49	73	23	12	9	.3	2.4	229	39	15	.40	19

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS, TOTAL (MG/L AS P) (71886)	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)
NOV , 1982												
02...	369	327	.49	785	4.8	<.060	1.40	.120	.77	.150	.250	120
FEB , 1983												
22...	232	208	.32	3540	5.5	.780	2.40	.130	7.4	.160	2.40	4230
MAY												
23...	326	296	.44	3060	9.4	.840	1.70	.090	1.8	.130	.590	973
JUL												
22...	340	322	.46	1320	8.3	.030	1.40	.200	1.9	.230	.610	392

K Results based on colony count outside acceptable range (non-ideal colony count).

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

DATE	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. X FINER THAN .062 MM (70331)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS SA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV , 1982											
02...	262	75	3	20	130	<1	<1	<1	<3	7	8
FEB , 1983											
22...	64500	90	2	70	140	<1	<1	<1	<3	7	51
MAY											
23...	9140	84	2	<10	160	<1	<1	<1	<3	6	46
JUL											
22...	1520	92	3	<10	160	<1	<1	<1	<3	5	11

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01055)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV , 1982											
02...	5	20	26	.1	<10	2	2	<1	260	<6.0	4
FEB , 1983											
22...	2	15	170	.1	<10	4	3	<1	150	<6.0	6
MAY											
23...	2	12	8	<.1	<10	2	3	<1	260	<6.0	60
JUL											
22...	<1	18	5	--	<10	5	4	<1	270	<6.0	11

TARKIO RIVER BASIN

06811840 TARKIO RIVER AT STANTON, IA

LOCATION.--Lat 40°58'52", long 95°06'32", in NW1/4 SW1/4 sec.4, T.71 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, on right bank 10 ft downstream from bridge on county highway H42, 0.1 mi downstream from Little Tarkio Creek, and 0.5 mi west of Stanton.

DRAINAGE AREA.--49.3 mi².

PERIOD OF RECORD.--October 1957 to current year. Annual maximum, water years 1952-57.

REVISED RECORDS.--WSP 1919: 1960 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,104.67 ft NGVD.

REMARKS.--Records poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 28.2 ft³/s, 7.60 in/yr, 20,430 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s June 9, 1967, gage height, 28.56 ft, from rating curve extended above 1,500 ft³/s on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,250 ft³/s June 29, gage height, 15.23 ft at 0215 hours, no other peak above base of 1,500 ft³/s; no flow Aug. 31 to Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	8.2	12	33	8.0	40	169	276	30	111	11	.00
2	26	8.0	22	30	8.0	37	119	145	28	95	9.0	.00
3	21	7.4	16	26	10	36	99	107	26	81	7.5	.00
4	16	7.4	15	27	10	35	86	77	24	69	7.4	.00
5	22	7.6	45	26	10	48	112	71	29	64	6.9	.00
6	23	8.1	31	31	10	90	119	67	30	63	6.7	2.8
7	22	7.9	24	30	10	81	94	67	28	59	7.7	2.8
8	22	7.6	18	28	12	58	88	61	29	54	5.8	2.1
9	30	7.2	17	43	12	59	160	58	29	50	5.0	1.6
10	20	7.0	20	54	12	54	161	55	28	48	4.4	1.4
11	16	67	13	27	12	43	115	50	30	44	4.0	2.0
12	13	22	15	33	16	42	167	47	32	41	3.9	2.1
13	13	14	16	37	142	43	152	50	30	40	3.6	2.1
14	11	13	16	35	238	39	150	50	40	38	3.2	2.3
15	10	11	15	44	111	165	112	52	29	35	2.8	3.0
16	7.5	11	13	27	93	202	97	57	35	34	2.1	3.5
17	7.5	10	14	22	72	89	86	71	43	33	1.4	3.5
18	7.2	10	15	21	91	67	77	70	196	30	1.2	3.6
19	7.4	11	13	21	110	58	70	61	74	27	1.1	3.9
20	9.4	9.7	13	22	85	53	65	57	59	24	1.0	5.4
21	7.2	8.7	12	20	71	48	62	52	49	21	1.3	5.2
22	7.4	8.3	12	21	68	44	59	45	44	19	1.2	5.0
23	7.0	7.5	13	21	63	43	53	41	41	19	1.1	5.0
24	6.9	7.5	19	20	55	42	50	38	40	20	1.4	5.0
25	6.9	8.2	21	19	49	40	49	36	38	20	1.5	5.1
26	6.7	7.7	14	15	47	89	46	34	39	17	.79	5.1
27	6.8	8.0	81	19	45	81	44	33	49	15	.49	5.0
28	21	20	130	21	42	99	44	33	679	11	.27	5.0
29	11	16	51	53	---	145	41	33	832	50	.10	4.8
30	7.8	14	41	29	---	247	40	32	156	18	.02	4.8
31	7.3	---	37	15	---	278	---	31	---	14	.00	---
TOTAL	427.0	361.0	794	870	1512.0	2495	2786	1957	2816	1265	103.87	92.10
MEAN	13.8	12.0	25.6	28.1	54.0	80.5	92.9	63.1	93.9	40.8	3.35	3.07
MAX	30	67	130	54	238	278	169	276	832	111	11	5.4
MIN	6.7	7.0	12	15	8.0	35	40	31	24	11	.00	.00
CFSM	.28	.24	.52	.57	1.10	1.63	1.88	1.28	1.91	.83	.07	.06
IN.	.32	.27	.60	.66	1.14	1.88	2.10	1.48	2.12	.95	.08	.07
AC-FT	847	716	1570	1730	3000	4950	5530	3880	5590	2510	206	183

CAL YR 1982	TOTAL	24873.60	MEAN	68.1	MAX	3000	MIN	3.4	CFSM	1.38	IN	18.77	AC-FT	49340
WTR YR 1983	TOTAL	15478.97	MEAN	42.4	MAX	832	MIN	.00	CFSM	.86	IN	11.68	AC-FT	30700

06813500 MISSOURI RIVER AT RULO, NE

LOCATION (revised).--Lat 40°03'13", long 95°25'19", in NW1/4 NW1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 at Rulo, 3.2 mi upstream from Big Nemaha River, and at mile 498.0.

DRAINAGE AREA.--414,900 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of Geological Survey. Gage-height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission September 1929 to September 1950 in files of Kansas City office of Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft NGVD. Oct. 1949 to Sept. 12, 1950, nonrecording gage at site 80 ft upstream and Sept. 13, 1950 to Apr. 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--34 years, 40,190 ft³/s, 29,120,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft³/s Apr. 22, 1952, gage height, 25.60 ft; minimum daily, 4,420 ft³/s Jan. 13, 1957; minimum gage height, 0.65 ft Jan. 7, 1971, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 122,000 ft³/s July 2, gage height, 21.38 ft; minimum daily, 34,000 ft³/s Dec. 31; minimum gage height, 7.17 ft Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44800	50600	62800	34200	41600	74200	86000	63100	55600	116000	57100	50900
2	47700	50400	62300	34800	38600	74800	104000	72900	55700	121000	56200	50800
3	62600	50400	61800	34800	37000	75100	98100	88500	55000	121000	56100	50900
4	53400	49800	62000	34600	36600	74700	87300	94400	55600	116000	56000	50000
5	53200	49600	61900	35200	35800	77100	77700	93800	56500	107000	56400	49100
6	51400	49400	61100	36000	35700	78800	75800	85400	56700	96700	55400	48500
7	51700	60700	69000	38000	36000	82100	75700	78100	56500	87300	54800	50000
8	51100	50400	57500	39600	36400	90400	75700	76000	57500	81000	54700	49400
9	51800	50300	54300	40800	35800	89800	75400	74000	57900	77200	53900	48900
10	57700	51300	52500	42400	35800	82000	76000	67800	57300	74500	53600	48300
11	64500	52000	51700	44500	36500	72700	75400	66000	58500	71800	52500	48900
12	58300	58900	49200	43000	37200	68300	74700	63200	58500	69100	51900	47900
13	55300	66400	47200	41000	37600	66500	77700	63200	60600	66900	51100	48200
14	53800	68700	44700	40400	41100	64500	84900	66100	82500	64500	49900	49700
15	53200	65700	42600	41600	48900	64800	93900	65800	97800	62500	60300	50200
16	51900	64000	41000	40800	54900	68900	94300	64200	100000	61200	49600	49800
17	51600	63200	40100	39700	59200	74700	88600	62300	91700	60200	49600	51000
18	62100	64000	40000	39100	60100	71400	87700	64200	104000	59200	49100	50400
19	51500	64400	40700	38500	63200	66000	87000	75900	116000	58300	48700	49800
20	51800	66700	41500	37800	79300	63200	83900	79000	114000	57000	48200	51800
21	52500	66900	41300	38200	87100	62400	78100	73300	113000	57000	48700	54400
22	52800	65500	40800	38600	74800	61400	74600	71600	110000	57900	48700	53300
23	52000	64300	40900	38800	72600	60900	72000	66100	108000	57800	49900	51600
24	50900	54500	40700	39900	74500	50100	70000	63600	109000	56800	49600	50100
25	50900	64400	41400	39500	71700	60300	67200	66600	108000	58100	48700	49900
26	51300	63800	44000	38700	69300	53800	66300	64500	97700	58100	49600	49500
27	51200	62200	46800	38300	66100	77900	65100	60400	90900	56100	49500	50400
28	52100	60800	45200	37500	68200	67700	63900	59800	95200	54500	51000	50300
29	51800	61700	41900	38300	---	62900	63900	57900	101000	55000	51000	52000
30	51300	62600	36600	42600	---	63500	62100	56400	109000	56800	50600	52600
31	50700	---	34000	47000	---	70500	---	55300	---	57000	51000	---
TOTAL	1624900	1772500	1487400	1214200	1471600	2191400	2363000	2159400	2489700	2253500	1603400	1508600
MEAN	52420	59080	47980	39170	52560	70690	78770	69660	82990	72690	51720	50290
MAX	64500	68700	62800	47000	87100	90400	104000	94400	116000	121000	57100	54400
MIN	44800	49400	34000	34200	35700	60100	62100	55300	55000	54500	48200	47900
AC-FT	3223000	3516000	2950000	2408000	2919000	4347000	4687000	4283000	4938000	4470000	3180000	2992000
CAL YR 1982	TOTAL	16940500	MEAN	46410	MAX	121000	MIN	11600	AC-FT	33600000		
WTR YR 1983	TOTAL	22139600	MEAN	60650	MAX	121000	MIN	34000	AC-FT	43910000		

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", Long 96°00'47", in SW1/4 NE1/4 sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.6 mi downstream from North Branch, 1.2 mi east of city square of Clarinda, and 7.5 mi upstream from East Nodaway River.

DRAINAGE AREA.--762 mi².

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--May 1918 to July 1926, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 960.36 ft NGVD. Prior to July 5, 1925, and May 28, 1936, to Mar. 26, 1967, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft above station. Average daily pumpage was 1.53 ft³/s.

COOPERATION.--Average pumpage furnished by Clarinda water works.

AVERAGE DISCHARGE.--53 years (1918-24, 1936-83), 338 ft³/s, 6.02 in/yr, 244,900 acre-ft/yr; median of yearly mean discharges, 260 ft³/s, 4.5 in/yr, 188,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,100 ft³/s June 13, 1947, gage height, 25.3 ft, from floodmark, from rating curve extended above 15,000 ft³/s on basis of an overflow profile and extended channel rating; minimum daily, 1.0 ft³/s Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31 1923. 27-31, 1923.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft, from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 12	0115	5,270	7.80	June 29	0230	*7,340	*9.52
Dec. 28	0930	5,400	a8.05				

a Observed

Minimum daily discharge, 33 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286	203	482	781	300	603	3450	710	486	1550	183	45
2	249	228	460	600	200	498	2370	2530	481	1060	153	42
3	252	189	436	600	200	470	2430	1440	496	876	137	39
4	262	181	392	596	260	463	1740	1400	459	761	128	40
5	207	178	769	614	260	519	1580	1010	462	647	113	41
6	204	174	2720	606	260	802	2270	882	471	596	110	46
7	237	174	1270	826	250	1940	1870	920	444	563	126	48
8	283	168	893	727	260	1130	1470	1000	397	532	118	44
9	877	162	600	665	300	706	2080	706	375	503	110	41
10	565	169	600	1710	300	541	3390	676	356	486	98	42
11	332	875	400	1380	300	503	2110	660	377	462	93	43
12	274	3490	400	634	400	474	1990	642	384	437	88	41
13	237	1080	470	703	400	474	2790	771	390	402	82	36
14	228	643	604	778	1000	478	2210	759	1470	383	77	36
16	214	529	581	696	3180	445	1900	738	1460	361	77	52
16	197	483	577	456	1750	1230	1550	647	716	363	69	58
17	187	456	677	400	1970	1310	1330	626	625	350	63	63
18	188	437	558	350	1220	797	1210	738	1480	336	58	52
19	186	431	568	350	2400	666	1120	2880	1240	319	66	41
20	190	438	568	360	2350	589	1020	1840	763	293	56	60
21	199	397	494	400	1310	524	942	1170	630	270	67	63
22	191	353	636	350	988	453	914	1160	636	255	75	58
23	183	336	486	350	937	433	887	1030	478	249	70	53
24	178	333	577	350	844	426	781	802	440	243	62	47
25	176	315	1240	350	710	410	740	763	411	243	60	44
26	168	361	1120	300	681	686	696	755	386	240	66	40
27	166	337	666	300	554	1070	652	760	513	231	53	35
28	178	448	3910	360	541	919	609	626	1370	213	61	36
29	268	612	2070	600	---	1480	804	680	5600	307	52	35
30	276	639	1260	1880	---	2560	581	532	3420	609	52	33
31	208	---	954	600	---	4140	---	606	---	283	49	---
TOTAL	7834	14707	27137	19351	23985	27619	47286	30258	27114	14402	2641	1333
MEAN	253	490	876	624	867	888	1576	976	904	465	85.2	44.4
MAX	877	3490	3910	1880	3180	4140	3450	2880	5600	1550	183	60
MIN	166	169	392	300	200	410	581	505	356	213	49	33
CFSM	.33	.64	1.16	.82	1.13	1.17	2.07	1.28	1.19	.61	.11	.06
IN.	.38	.72	1.32	.94	1.17	1.34	2.31	1.48	1.32	.70	.13	.07
AC-FT	16540	29170	53830	38380	47670	54580	93790	60020	53780	28570	6240	2640

CAL YR 1982	TOTAL	326736	MEAN	892	MAX	19700	MIN	48	CFSM	1.17	IN	15.90	AC-FT	646100
WTR YR 1983	TOTAL	243567	MEAN	667	MAX	5600	MIN	33	CFSM	0.88	IN	11.89	AC-FT	483100

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to September 1978, October 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Suspended-sediment samples at normal flows and winter period are collected below dam 300 ft upstream from gage. Samples at higher stages are collected from bridge at gage. Random water temperatures are on file for the 1979 water year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 600 micromhos Aug. 22, 1982; minimum daily, 130 micromhos June 15, 1976.

WATER TEMPERATURES: Maximum daily, 30.5°C Aug. 23, 1978; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 23,800 mg/L Apr. 17, 1978; minimum daily mean, 5 mg/L Dec. 14, 1977, Feb. 24, 1978.

SEDIMENT LOADS: Maximum daily, 1,500,000 tons June 16, 1983; minimum daily, 0.23 ton Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 490 micromhos Nov. 27, Dec. 13; minimum daily, 230 micromhos Dec. 28.

WATER TEMPERATURES: Maximum daily, 28.0°C Aug. 4, 5, 17; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 11,000 mg/L May 2; minimum daily mean, 7 mg/L Sept. 23.

SEDIMENT LOADS: Maximum daily, 78,700 tons May 2; minimum daily, 1.0 ton Sept. 23, 24.

SPECIFIC CONDUCTANCE, LABORATORY (MICROMHOS/CM AT 25 D, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	440	440	470	420	360	410	320	440	430	400	350	370
2	430	430	440	410	420	410	370	330	420	400	380	370
3	390	430	440	430	430	410	360	360	420	390	400	370
4	440	450	450	440	460	410	400	360	420	370	400	370
5	450	450	450	440	460	410	420	400	420	390	400	---
6	450	440	300	440	450	400	400	420	430	390	---	370
7	440	460	330	440	440	350	400	420	430	390	---	370
8	430	390	390	400	450	360	420	380	430	390	---	390
9	400	450	430	410	440	390	400	420	430	400	---	410
10	350	460	450	400	430	400	360	420	430	400	390	400
11	370	440	450	330	430	410	370	430	430	410	390	410
12	420	250	480	390	420	410	410	430	430	410	390	410
13	430	270	490	430	410	420	400	400	410	410	390	400
14	450	370	470	430	280	410	390	420	380	410	---	410
15	450	410	440	410	270	410	420	420	380	410	370	380
16	440	410	450	450	270	400	420	420	350	410	350	370
17	450	420	430	450	300	350	440	420	380	410	350	380
18	470	430	440	470	290	370	440	410	330	410	350	390
19	450	430	430	470	290	400	440	400	330	410	360	390
20	450	430	440	470	290	410	440	400	330	410	350	340
21	450	430	440	460	310	410	440	400	330	420	340	380
22	450	430	450	450	340	410	450	400	330	420	350	390
23	450	430	450	440	360	410	440	400	330	410	380	400
24	460	440	450	430	370	410	440	400	330	410	370	400
25	450	490	430	430	390	440	440	420	330	410	370	410
26	450	430	380	430	400	450	440	400	330	430	370	380
27	450	490	410	450	410	400	440	400	400	410	370	380
28	450	440	230	460	410	400	440	420	400	410	380	390
29	430	430	250	420	---	400	450	420	400	370	380	400
30	430	420	370	310	---	380	460	420	400	300	370	390
31	440	---	410	300	---	350	---	430	---	---	370	---

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	14.0	7.0	1.0	3.0	8.0	9.0	13.0	16.0	26.0	26.0	22.0
2	19.0	13.0	11.0	1.0	2.0	10.0	7.0	12.0	18.0	26.0	26.0	26.0
3	19.0	13.0	9.0	3.0	.0	10.0	7.0	10.0	20.0	26.0	26.0	25.0
4	16.0	5.0	7.0	8.0	.0	13.0	5.0	13.0	20.0	23.0	28.0	26.0
5	18.0	5.0	7.0	5.0	2.0	14.0	6.0	14.0	18.0	22.0	28.0	---
6	19.0	6.0	5.0	5.0	1.0	13.0	5.0	16.0	16.0	24.0	---	26.0
7	12.0	9.0	5.0	6.0	4.0	10.0	5.0	15.0	16.0	24.0	---	25.0
8	16.0	17.0	6.0	5.0	5.0	7.0	7.0	11.0	19.0	24.0	---	22.0
9	16.0	11.0	3.0	4.0	4.0	1.0	6.0	13.0	21.0	23.0	---	23.0
10	13.0	12.0	7.0	4.0	4.0	2.0	7.0	15.5	22.0	25.0	26.0	23.0
11	12.0	12.0	6.0	2.0	4.0	2.0	7.0	14.0	22.0	24.0	25.0	19.0
12	10.0	10.0	6.0	2.0	4.0	4.0	9.0	17.0	22.0	24.0	23.0	21.0
13	11.0	6.0	3.0	2.0	4.0	7.0	9.0	13.0	22.0	26.0	22.0	16.0
14	9.0	5.0	4.0	3.0	4.0	8.0	6.0	14.0	21.0	25.0	---	18.0
15	11.0	3.0	3.0	3.0	6.0	9.0	5.0	12.0	19.0	25.0	26.0	17.0
16	11.0	3.0	10.0	4.0	4.0	7.0	8.0	13.0	21.0	22.0	25.0	16.0
17	12.0	4.0	3.0	3.0	5.0	6.0	8.0	13.0	20.0	25.0	28.0	16.0
18	12.0	6.0	3.0	5.0	4.0	7.0	7.0	14.0	21.0	26.0	27.0	21.0
19	14.0	8.0	4.0	2.0	9.0	7.0	8.0	14.0	21.0	27.0	27.0	20.0
20	6.0	12.0	4.0	2.0	8.0	6.0	8.0	13.0	22.0	27.0	26.0	15.0
21	5.0	10.0	4.0	5.0	7.0	3.0	10.0	13.0	24.0	27.0	27.0	10.0
22	5.0	9.0	4.0	3.0	7.0	4.0	13.0	13.0	24.0	27.0	27.0	11.0
23	5.0	6.0	5.0	2.0	7.0	6.0	12.0	15.0	26.0	26.0	26.0	9.0
24	5.0	5.0	---	3.0	6.0	5.0	10.0	14.0	23.0	27.0	25.0	12.0
25	5.0	3.0	7.0	3.0	8.0	6.0	12.0	15.0	25.0	21.0	26.0	17.0
26	10.0	3.0	5.0	2.0	7.0	5.0	13.0	16.0	26.0	24.0	26.0	18.0
27	5.0	3.0	5.0	4.0	8.0	3.0	12.0	17.0	24.0	25.0	26.0	18.0
28	13.0	4.0	5.0	5.0	6.0	3.0	13.0	17.0	23.0	27.0	27.0	20.0
29	9.0	5.0	3.0	5.0	---	6.0	15.0	19.0	22.0	26.0	25.0	20.0
30	10.0	6.0	3.0	4.0	---	5.5	13.0	18.0	22.0	26.0	27.0	18.0
31	12.0	---	3.0	3.0	---	8.0	---	18.0	---	---	26.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)									
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	168	130	114	62	199	259	578	1220	360	292	339	460
2	154	104	161	99	252	313	522	846	66	36	331	445
3	135	92	86	44	262	308	360	486	19	10	320	406
4	125	85	57	28	190	201	231	371	52	35	319	390
5	120	67	35	17	1620	7230	188	312	106	72	361	506
6	101	56	12	5.6	6250	47400	177	290	111	75	1540	3330
7	108	69	37	17	2280	7820	848	1890	142	96	4270	22400
8	150	115	40	18	1120	2700	787	1540	139	94	1900	5800
9	1970	5250	35	15	460	745	370	664	127	103	780	1490
10	835	1270	37	16	319	431	2830	15700	112	91	473	691
11	268	240	3450	23800	212	229	3200	13200	114	92	381	517
12	167	124	6490	59900	125	135	560	959	137	148	317	406
13	147	94	2000	5830	96	122	378	717	167	180	343	439
14	135	83	565	981	140	228	392	823	6180	16700	370	478
15	99	57	350	500	138	216	448	721	7270	62400	453	544
16	97	52	285	372	113	176	260	320	3230	15300	3690	12300
17	130	66	262	322	102	159	191	206	3020	16100	4620	16300
18	167	85	243	287	171	258	180	170	2190	7210	2060	4430
19	107	53	235	273	386	592	115	109	5100	33000	800	1440
20	100	51	262	310	328	503	137	129	3780	24000	550	875
21	102	55	215	230	317	423	86	93	2060	7290	458	648
22	100	52	183	174	309	447	88	83	1230	3280	382	467
23	74	37	172	156	258	339	83	78	690	1750	370	433
24	45	22	135	121	287	447	90	85	679	1550	373	429
25	48	23	148	126	3050	10200	133	126	500	958	363	402
26	31	14	272	265	1880	5690	82	66	388	609	700	1110
27	27	12	197	179	1780	3790	57	46	359	537	1620	4680
28	49	24	237	287	7180	84400	85	80	360	526	840	2080
29	178	129	532	879	2200	12300	860	1390	---	---	2110	8430
30	242	180	427	621	750	2550	4040	20500	---	---	3600	24800
31	111	62	---	---	593	1530	1470	1980	---	---	5830	65200
TOTAL	---	8753	---	105934.6	---	192141	---	65200	---	192534	---	182326

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (00061)	NUMBER OF SAM- PLING POINTS (00063)	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.
				% FINER THAN .062 MM (80164)	% FINER THAN .125 MM (80165)	% FINER THAN .250 MM (80166)	% FINER THAN .500 MM (80167)
OCT							
13...	0945	245	5	0	1	6	83
NOV							
24...	1030	3960	3	0	1	10	72
DEC							
16...	0955	32	3	3	4	10	55
MAR							
30...	1000	2460	7	0	1	10	72
MAY							
10...	1645	686	3	--	0	10	92
AUG							
09...	0910	115	3	--	0	3	49
SEP							
13...	1500	37	3	--	0	2	45

DATE	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.
	% FINER THAN 1.00 MM (80158)	% FINER THAN 2.00 MM (80169)	% FINER THAN 4.00 MM (80170)	% FINER THAN 8.00 MM (80171)	% FINER THAN 16.0 MM (80172)	% FINER THAN 32.0 MM (80173)
OCT						
13...	94	97	99	100	--	--
NOV						
24...	83	92	96	97	98	100
DEC						
16...	79	87	90	93	96	100
MAR						
30...	97	99	100	--	--	--
MAY						
10...	99	100	--	--	--	--
AUG						
09...	83	90	93	97	100	--
SEP						
13...	78	88	90	94	97	100

PLATTE RIVER BASIN

195

06B18750 PLATTE RIVER NEAR DIAGONAL, IA

LOCATION.--Lat 40°46'02", long 94°24'46", in NE1/4 NW1/4 sec.22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, on left bank at downstream side of bridge on county highway, 2.2 mi upstream from Turkey Creek, 4.6 mi southwest of Diagonal, and 4.9 mi downstream from Gard Creek.

DRAINAGE AREA.--217 mi².

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--WSP 2119: 1969 (P).

GAGE.--Water-stage recorder. Datum of gage is 1,095.27 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 131 ft³/s, 8.20 in/yr, 94,910 acre-ft/yr; median of yearly mean discharges, 110 ft³/s, 5.9 in/yr, 79,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,420 ft³/s Oct. 12, 1973, gage height, 23.24 ft; minimum daily, 0.21 ft³/s Jan. 14, 15, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1967 reached a stage of 23.16 ft, from floodmark by local resident, discharge, 6,360 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	unknown	*5,640	a*21.64	June 28	21:30	3,170	15.91
Dec. 5	2300	3,480	15.70				

a from floodmark

Minimum daily discharge, 3.4 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	78	166	100	90	141	796	94	92	216	11	5.3
2	45	95	155	120	60	133	1820	279	86	149	9.6	5.0
3	45	73	137	130	60	125	1220	180	302	113	9.6	4.8
4	43	64	116	125	80	128	566	159	110	153	10	4.6
5	50	56	1520	128	80	199	528	108	98	106	11	4.5
6	200	51	1680	144	80	369	835	99	106	78	8.0	8.4
7	83	49	632	252	80	413	477	301	76	63	15	6.3
8	400	47	345	161	80	225	356	145	63	54	12	5.3
9	2500	44	231	188	90	155	1050	92	57	47	9.2	5.3
10	400	43	183	194	90	147	1130	81	54	42	8.0	6.3
11	240	740	140	223	100	123	548	74	49	42	7.3	6.6
12	195	1150	120	144	100	110	722	73	53	40	7.0	5.3
13	160	251	100	176	200	114	619	100	60	35	7.0	5.3
14	132	159	100	176	1190	114	600	182	846	32	7.0	4.5
15	109	132	120	101	913	109	414	172	217	28	6.6	4.9
16	101	115	120	129	544	133	315	103	135	26	6.3	6.5
17	78	108	110	110	534	119	259	98	155	25	6.3	10
18	75	104	110	91	331	105	217	178	631	23	6.0	5.2
19	71	111	100	90	520	103	198	1630	355	21	6.0	3.7
20	76	118	100	91	557	101	173	532	183	20	6.0	11
21	72	105	95	88	407	99	159	334	134	18	6.0	15
22	57	84	105	81	340	90	150	531	105	17	6.0	11
23	66	103	100	80	292	90	172	267	89	18	6.0	5.6
24	52	105	95	79	259	101	141	194	79	18	6.0	4.2
25	50	90	90	78	203	99	126	167	66	16	6.0	4.1
26	48	95	100	71	173	140	118	142	62	15	5.6	3.9
27	46	87	200	60	163	293	108	119	65	14	5.3	3.7
28	85	190	150	80	148	428	104	115	2020	14	5.3	3.7
29	181	285	1000	588	---	672	99	118	1170	14	5.0	3.6
30	84	199	200	461	---	1080	95	105	463	17	4.8	3.4
31	67	---	150	120	---	1320	---	95	---	12	5.0	---
TOTAL	5846	4931	8570	4979	7864	7578	14115	6868	7982	1486	229.9	176.9
MEAN	189	164	276	161	281	244	471	222	266	47.9	7.42	5.90
MAX	2500	1150	1680	588	1190	1320	1820	1630	2020	216	15	15
MIN	43	43	90	60	60	90	95	73	49	12	4.8	3.4
CFSM	.87	.76	1.27	.74	1.30	1.12	2.17	1.02	1.23	.22	.03	.03
IN.	1.00	.85	1.47	.85	1.35	1.30	2.42	1.18	1.37	.25	.04	.03
AC-FT	11600	9780	17000	9880	15600	15030	28000	13620	15830	2950	456	351
CAL YR 1982	TOTAL	104413.0	MEAN 286	MAX 3870	MIN 9.0	CFSM 1.32	IN 17.90	AC-FT 207100				
WTR YR 1983	TOTAL	70625.8	MEAN 193	MAX 2500	MIN 3.4	CFSM .89	IN 12.11	AC-FT 140100				

PLATTE RIVER BASIN

06819190 EAST FORK ONE HUNDRED AND TWO RIVER NEAR BEDFORD, IA

LOCATION.--Lat 40°38'01", long 94°44'41", in NE1/4 NE1/4 sec.9, T.67 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway J55, 1.0 mi upstream from Daugherty Creek, and 2.8 mi southwest of junction of U.S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.--92.1 mi².

PERIOD OF RECORD.--September 1959 to Sept. 30, 1983 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,057.51 ft NGVD (levels by Corps of Engineers). Prior to Oct. 1, 1968, at datum 5.00 ft higher.

REMARKS.--Records fair except those for winter period, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 54.5 ft³/s, 8.04 in/yr, 39,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,980 ft³/s Oct. 11, 1973, gage height, 20.72 ft; maximum gage height, 20.95 ft Jan. 12, 1960, present datum; no flow at times in 1966-68, 1972, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 8	2300	*2,870	*10.04	June 18	1000	2,050	8.33
Dec. 28	0100	2,690	9.69	June 28	0700	2,610	9.52

Minimum daily discharge, 0.46 ft³/s Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	13	16	37	30	10	23	309	38	26	60	1.6	.90		
2	13	19	33	20	6.0	22	626	54	24	37	1.5	.82		
3	14	16	29	30	6.0	22	295	37	239	28	1.5	.82		
4	13	16	21	45	8.0	22	142	31	38	23	1.3	.90		
5	13	15	735	23	8.0	69	202	26	44	16	1.3	.90		
6	16	14	560	20	9.0	73	299	26	45	14	1.3	.75		
7	17	13	218	30	9.0	50	127	122	28	12	1.2	4.6		
8	419	12	74	24	10	30	95	38	24	10	1.2	2.0		
9	922	12	64	45	10	19	545	30	21	8.8	.98	1.1		
10	108	12	162	168	10	19	392	25	19	8.0	.75	1.2		
11	58	132	146	35	15	16	177	22	16	7.3	.75	1.2		
12	44	127	83	25	20	16	250	22	18	5.8	.46	.98		
13	38	67	54	20	191	20	170	149	33	5.4	.75	.90		
14	33	39	46	25	432	18	163	167	539	5.6	.68	.98		
15	27	36	30	30	254	18	93	74	72	4.5	.62	1.3		
16	23	36	29	18	160	19	74	41	112	4.2	.62	1.5		
17	20	33	26	12	128	15	60	40	87	3.8	.50	1.2		
18	19	31	35	10	91	16	57	98	882	3.6	.56	.98		
19	19	34	30	8.0	172	14	51	395	166	3.1	.50	1.1		
20	19	32	30	7.0	146	16	46	95	89	2.6	.50	3.7		
21	18	26	22	8.0	106	16	45	297	54	2.7	.56	2.1		
22	16	25	24	8.0	87	14	43	331	39	2.2	1.7	1.5		
23	16	24	30	8.0	68	16	39	84	33	2.2	1.2	1.3		
24	15	15	75	8.0	54	17	34	54	29	2.2	.90	1.3		
25	14	14	200	6.0	36	16	33	43	25	2.1	.75	1.1		
26	13	15	44	5.0	33	64	31	34	24	2.0	.75	.88		
27	12	15	324	7.0	30	189	29	39	26	1.9	.82	.85		
28	16	57	920	8.0	25	244	28	41	1110	1.9	.90	.82		
29	42	75	102	300	---	455	27	27	396	1.9	.90	.82		
30	37	48	50	85	---	653	27	26	178	1.7	.82	.76		
31	25	---	40	19	---	482	---	24	---	1.6	.98	---		
TOTAL	2072	1026	4273	1087.0	2134.0	2683	4509	2530	4436	285.1	28.85	39.26		
MEAN	65.8	34.2	138	35.1	76.2	85.5	150	81.6	148	9.20	.93	1.31		
MAX	922	132	920	300	432	653	626	395	1110	60	1.7	4.6		
MIN	12	12	21	5.0	6.0	14	27	22	16	1.6	.46	.75		
CFSM	.73	.37	1.50	.38	.83	.94	1.63	.89	1.61	.10	.01	.01		
IN.	.84	.41	1.73	.44	.86	1.08	1.82	1.02	1.79	.12	.01	.02		
AC-FT	4110	2040	8480	2160	4230	5320	8940	5020	8800	565	57	78		
CAL YR 1982	TOTAL	50750.50	MEAN	139	MAX	3590	MIN	1.5	CFSM	1.51	IN	20.50	AC-FT	100700
WTR YR 1983	TOTAL	25103.21	MEAN	68.8	MAX	1110	MIN	.46	CFSM	.75	IN	10.14	AC-FT	49790

GRAND RIVER BASIN

06897950 ELK CREEK NEAR DECATUR CITY, IA
(Hydrologic bench-mark station)

LOCATION.--Lat 40°43'18", long 93°56'12", near SE corner sec.34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at right downstream corner of bridge on county highway, 1,000 ft downstream from West Elk Creek, 5.2 mi upstream from mouth, and 5.7 mi southwest of Decatur City.

DRAINAGE AREA.--52.5 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 924.70 ft NGVD. Oct. 1, 1967, to Sept. 30, 1974, at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--16 years, 30.7 ft³/s, 7.94 in/yr, 22,240 acre-ft/yr; median of yearly discharges, 25 ft³/s, 6.5 in/yr, 18,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s June 2, 1980, gage height, 28.22 ft, from rating curve extended above 5,300 ft³/s on basis of step-backwater computation; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1967, reached a stage of 18.35 ft, datum in use prior to Oct. 1, 1974, discharge, 17,800 ft³/s, estimated from rating curve extended above 5,300 ft³/s on basis of step-backwater computation. Flood of Aug. 6, 1959, reached a stage between 20.5 and 22.5 ft, datum in use prior to Oct. 1, 1974, 300 ft downstream, from information by assistant county engineer, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 24	1745	964	14.83	May 27	0630	3,420	19.00
Dec. 27	2330	*5,420	*21.08	June 3	0400	1,540	16.18
Apr. 2	1130	735	14.05	June 29	1430	1,680	16.44
May 6	2215	2,640	18.00				

Minimum daily discharge, no flow Aug. 24-30, Sept. 1-5, 7-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	9.7	15	38	8.4	15	85	147	19	28	.83	.00
2	20	7.8	35	34	7.8	14	503	54	20	16	.92	.00
3	30	7.3	25	31	7.0	13	117	33	337	13	.81	.00
4	28	7.0	18	28	6.6	13	62	24	46	11	.84	.00
5	23	7.4	300	24	5.4	52	197	21	28	7.6	.76	.00
6	19	7.2	130	25	6.2	100	123	228	25	5.8	3.2	.03
7	50	7.4	60	23	6.0	49	57	165	18	4.8	1.5	.00
8	140	7.2	47	21	5.8	28	48	60	15	3.9	.63	.00
9	310	6.5	37	18	6.0	19	261	46	12	3.3	.36	.00
10	52	5.9	31	17	6.4	18	101	38	10	2.9	.45	.00
11	16	35	27	16	7.2	17	55	35	8.9	2.6	.41	.00
12	13	150	24	15	12	17	132	36	8.5	2.3	.45	.00
13	11	60	21	14	24	18	62	37	7.6	2.2	.43	.00
14	10	25	19	14	130	15	54	41	154	2.2	.36	.00
15	9.4	9.8	16	13	81	14	38	37	31	1.9	.32	.00
16	8.5	8.1	14	12	56	14	31	28	31	2.0	.28	.00
17	7.7	8.4	15	11	52	12	29	30	44	2.0	.38	.00
18	7.1	8.6	17	10	54	13	27	45	30	2.0	.39	.00
19	6.6	11	15	9.5	64	12	25	73	21	1.9	.50	.00
20	7.2	12	16	8.9	53	16	22	43	16	1.6	.75	.00
21	6.7	11	17	9.6	41	13	20	86	12	1.5	.50	.00
22	6.3	9.2	18	10	34	12	20	72	9.2	1.4	.40	.00
23	5.9	9.1	28	11	28	14	18	40	7.0	1.4	.15	.00
24	5.6	9.4	367	11	25	14	16	48	6.3	1.3	.00	.00
25	5.3	8.8	100	12	20	13	15	73	6.0	1.4	.00	.00
26	5.0	8.4	33	10	18	51	13	33	8.8	1.1	.00	.00
27	4.8	9.0	629	8.4	17	166	12	763	7.0	1.1	.00	.00
28	56	86	685	9.0	15	206	14	75	38	.97	.00	.00
29	29	48	70	30	---	186	12	33	369	1.0	.00	.00
30	13	26	54	14	---	129	12	24	76	1.0	.00	.00
31	9.2	---	44	9.6	---	96	---	21	---	.74	.01	---
TOTAL	926.3	626.2	2927	517.0	807.8	1369	2181	2489	1421.3	129.91	15.63	.03
MEAN	29.9	20.9	94.4	16.7	28.9	44.2	72.7	80.3	47.4	4.19	.50	.001
MAX	310	150	685	38	130	206	503	763	369	28	3.2	.03
MIN	4.8	5.9	14	8.4	5.8	12	12	21	6.0	.74	.00	.00
CFSM	.57	.40	1.80	.32	.55	.84	1.39	1.53	.90	.08	.01	.000
IN.	.66	.44	2.07	.37	.57	.97	1.55	1.76	1.01	.09	.01	.00
AC-FT	1840	1240	5810	1030	1600	2720	4330	4940	2820	258	31	.06
CAL YR 1982 TOTAL	24947.58			MEAN 68.3	MAX 4870	MIN .03	CFSM 1.30	IN 17.68	AC-FT 49480			
WTR YR 1983 TOTAL	13410.17			MEAN 36.7	MAX 763	MIN .00	CFSM .70	IN 9.50	AC-FT 26600			

GRAND RIVER BASIN

06897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

REMARKS.--Miscellaneous biological data collected September 1970 to September 1972 are available in the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, SOLVED (MG/L) (00300)	OXYGEN, (PERCENT SATURATION) (00301)	BAROMETRIC PRESURE (MM HG) (00025)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREPTOCOCCI, KF AGAR PER (31673)
NOV , 1982											
02...	1830	8.1	514	7.9	14.0	8.0	10.5	103	--	460	8000
JAN , 1983											
25...	1400	12	450	8.0	.5	3.0	13.7	98	739	55	440
APR											
19...	1500	27	487	8.2	13.0	10	10.5	--	--	--	--
JUL											
13...	1630	1.7	444	8.4	33.0	3.0	11.1	160	740	260	370

DATE	HARDNESS (MG/L AS CAC03) (00900)	HARDNESS, NONCARBONATE (MG/L AS CAC03) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00928)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
NOV , 1982											
02...	260	25	76	17	11	8	.3	6.2	235	50	8.5
JAN , 1983											
25...	270	55	78	18	12	9	.3	2.5	214	57	8.9
APR											
19...	230	33	66	15	11	9	.3	2.4	194	52	8.2
JUL											
13...	230	46	64	16	11	9	.3	5.5	180	37	12

DATE	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG C (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC (MG/L AS N) (00625)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)
NOV , 1982											
02...	.20	13	--	324	.44	7.0	.15	<.060	.60	.070	.34
JAN , 1983											
25...	.20	12	294	317	.40	9.6	.74	.180	.50	<.010	.12
APR											
19...	.20	11	279	283	.38	20.4	.78	.100	.90	.060	.28
JUL											
13...	.20	7.7	249	261	.34	1.1	<.10	.050	1.10	.020	.12

DATE	PHOSPHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. DIAM. X FINER THAN .062 MM (70331)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	ALUMINUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYLLIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)
NOV , 1982											
02...	.070	.110	16	.34	90	2	10	130	<1	<1	<1
JAN , 1983											
25...	.020	.040	48	1.6	39	--	--	--	--	--	--
APR											
19...	.060	.090	66	4.8	92	1	10	120	<1	<1	<1
JUL											
13...	.040	.040	25	.11	76	--	--	--	--	--	--

GRAND RIVER BASIN

06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE1/4 SE1/4 sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft downstream from bridge on U.S. Highway 69 at Davis City, 2.6 mi upstream from Dickersons Branch, and 5.2 mi upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi².

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft NGVD. May 14, 1918, to July 2, 1925, July 14, 1941, to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942, to Feb. 8, 1967, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--48 years (water years 1919-24, 1942-83), 370 ft³/s, 7.17 in/yr, 268,100 acre-ft/yr; median of yearly mean discharges, 320 ft³/s, 6.2 in/yr 232,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s June 10, 1974, gage height, 19.43 ft, from rating curve extended above 17,000 ft³/s on basis of velocity-area study; minimum daily, 0.1 ft³/s June 25, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1895, reached a stage of 22.8 ft, datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 6	1245	4,720	7.47	Apr. 3	0815	5,530	8.08
Dec. 28	0230	*6,710	*9.05	May 27	1200	6,000	8.46

Minimum daily discharge, 11 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	256	613	877	200	340	2920	454	388	951	53	13
2	126	232	500	700	180	318	4400	1160	344	549	55	13
3	144	459	435	540	160	305	5250	708	1990	449	36	14
4	154	281	366	480	150	291	3880	582	802	625	32	14
5	140	215	2130	450	145	419	1950	429	424	1150	31	14
6	172	189	4420	465	140	926	2320	371	371	770	31	14
7	261	181	3030	480	140	1900	1840	1540	342	683	51	14
8	201	178	1310	440	140	1410	1210	892	275	537	30	14
9	2580	175	747	420	140	713	1720	468	233	415	25	14
10	3290	169	541	450	150	481	3250	353	204	299	24	13
11	2170	815	460	430	160	398	2420	298	180	215	22	13
12	705	3940	390	410	190	357	2040	283	166	146	21	13
13	461	2520	380	400	280	353	2850	274	162	98	21	14
14	367	1010	363	380	740	357	1970	287	762	97	21	12
15	299	548	350	360	1800	340	1830	366	879	89	19	18
16	257	446	340	310	1700	326	1100	364	603	65	19	17
17	222	398	330	245	1400	337	920	315	499	62	19	15
18	204	376	315	220	1220	314	752	403	441	60	18	14
19	197	363	305	205	1210	286	635	896	563	59	17	13
20	177	371	295	215	1490	278	571	1760	501	58	16	17
21	161	351	280	240	1220	274	527	1890	325	58	16	16
22	160	326	271	230	934	264	478	1530	250	56	17	16
23	160	287	294	230	765	255	446	951	212	55	16	16
24	148	253	2070	235	635	270	417	816	186	53	16	18
25	145	209	2330	240	537	284	379	991	169	52	16	16
26	140	197	1550	215	451	378	350	694	162	52	16	16
27	134	217	1590	200	377	1570	329	4190	151	51	15	15
28	189	791	5650	195	344	1920	314	3510	335	51	15	13
29	718	1200	4660	210	---	2270	295	1430	2300	47	15	12
30	631	889	2800	500	---	2520	280	640	2480	51	14	11
31	386	---	1140	250	---	2730	---	462	---	44	14	---
TOTAL	15228	17852	40255	11322	16998	23184	47643	29307	16699	7957	731	432
MEAN	491	595	1299	365	607	748	1588	945	557	257	23.6	14.4
MAX	3290	3940	5650	877	1800	2730	5250	4190	2480	1150	55	18
MIN	126	169	271	195	140	255	280	274	151	44	14	11
CFSM	.70	.85	1.85	.52	.87	1.07	2.27	1.35	.80	.37	.03	.02
IN	.81	.95	2.14	.60	.90	1.23	2.53	1.55	.89	.42	.04	.02
AC-FT	30200	35410	79850	22460	33720	45990	94500	58130	33120	15780	1450	857
CAL YR 1982	TOTAL	279899	MEAN 767	MAX 6840	MIN 11	CFSM 1.09	IN 14.85	AC-FT 555200				
WTR YR 1983	TOTAL	227608	MEAN 624	MAX 5650	MIN 11	CFSM .89	IN 12.08	AC-FT 451500				

06898400 WELDON RIVER NEAR LEON, IA

LOCATION.--Lat 40°41'45", long 93°38'07", in NE1/4 NE1/4 sec.17, T.68 N., R.24 W., Decatur County, Hydrologic Unit 10280102, on left bank 10 ft downstream from bridge on county highway A, 200 ft upstream from unnamed creek, 1.3 mi downstream from Brush Creek, and 6.5 mi southeast of post office at Leon.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 905.25 ft NGVD.

REMARKS.--Records good except those for winter period which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 72.4 ft³/s, 9.45 in/yr, 52,450 acre-ft/yr; median of yearly mean discharges, 59 ft³/s, 7.7 in/yr, 42,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,600 ft³/s Aug. 6, 1959, gage height, 25.27 ft, from rating curve extended above 5,600 ft³/s on basis of contracted-opening and flow-over-embankment measurement at gage height 25.27 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage and discharge of the flood of Aug. 6, 1959 are the greatest since at least 1919.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,060 ft³/s Oct. 9, gage height, 14.37 ft., no peak above base of 4,500 ft³/s; minimum daily, 0.28 ft³/s Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	9.7	15	49	28	13	55	182	32	55	35	1.3	.91		
2	9.7	14	70	24	11	54	1370	36	46	27	1.2	.91		
3	13	12	58	21	10	50	301	28	1130	24	1.2	.97		
4	15	13	38	18	9.4	49	87	24	106	19	1.3	.99		
5	19	14	1460	15	9.0	56	390	23	57	14	1.3	.99		
6	26	13	548	17	8.6	143	371	21	49	9.7	1.5	1.3		
7	22	14	96	19	8.2	86	99	100	38	8.2	1.7	1.3		
8	143	13	48	17	8.0	39	67	36	31	7.2	1.5	1.1		
9	1240	12	46	16	8.2	26	427	24	29	6.0	1.5	.82		
10	67	10	35	15	8.5	23	292	19	25	5.0	1.4	.90		
11	33	299	30	14	10	22	92	18	23	4.2	1.2	1.3		
12	23	538	29	14	14	23	375	21	23	3.3	1.1	.98		
13	18	51	25	15	32	28	287	25	21	3.3	.94	.75		
14	16	30	23	14	280	22	135	22	188	2.4	1.3	.72		
15	14	26	20	13	220	19	66	21	49	2.1	1.1	2.4		
16	12	27	18	13	170	18	50	17	32	2.1	1.0	1.7		
17	12	28	18	12	140	18	44	19	53	2.0	.90	.97		
18	11	27	19	12	110	17	46	43	86	1.9	.77	.83		
19	11	28	18	11	180	18	43	239	67	1.9	.77	.55		
20	11	33	19	13	150	21	33	54	26	1.7	.90	1.8		
21	10	22	20	16	128	20	38	105	20	1.7	.60	1.1		
22	8.9	18	21	15	101	18	35	489	16	1.6	.77	.65		
23	8.5	20	23	14	83	19	33	55	21	1.4	.87	.57		
24	8.4	19	1010	15	73	20	29	48	19	1.5	.70	.46		
25	8.4	20	307	15	62	19	26	127	18	1.6	.57	.60		
26	8.2	17	70	14	54	63	25	37	21	1.5	.46	.28		
27	8.1	18	409	13	52	518	24	120	22	1.5	.38	.44		
28	31	360	1250	15	52	549	26	146	43	1.4	.51	.42		
29	91	176	81	70	---	356	25	314	234	1.5	.61	.62		
30	28	72	40	30	---	144	25	56	119	1.6	1.0	.44		
31	18	---	33	15	---	139	---	40	---	1.5	.96	---		
TOTAL	1953.9	1959	5931	553	2004.9	2752	5043	2359	2667	196.8	31.31	27.77		
MEAN	63.0	65.3	191	17.8	71.6	88.8	168	76.1	88.9	6.35	1.01	.93		
MAX	1240	538	1460	70	280	618	1370	489	1130	35	1.7	2.4		
MIN	8.1	10	18	11	8.0	17	24	17	16	1.4	.38	.28		
CFSM	.61	.63	1.84	.17	.69	.85	1.62	.73	.86	.06	.01	.009		
IN.	.70	.70	2.12	.20	.72	.98	1.80	.84	.95	.07	.01	.01		
AC-FT	3880	3890	11760	1100	3980	5460	10000	4680	5290	390	62	55		
CAL YR 1982	TOTAL	39945.50	MEAN	109	MAX	3840	MIN	1.2	CFSM	1.05	IN	14.29	AC-FT	79230
WTR YR 1983	TOTAL	25478.68	MEAN	69.8	MAX	1460	MIN	.28	CFSM	.67	IN	9.11	AC-FT	50540

CHARITON RIVER BASIN

05903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW1/4 NE1/4 sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft downstream from bridge on county highway S43, 0.4 mi downstream from Wolf Creek, and 5.0 mi southeast of Chariton.

DRAINAGE AREA.--182 mi².

PERIOD OF RECORD.--October 1965 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water-stage recorder. Datum of gage is 917.90 ft (revised) NGVD (Corps of Engineers bench mark).

REMARKS.--Records fair except those for winter period which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years, 113 ft³/s, 8.48 in/yr, 81,870 acre-ft/yr; median of yearly mean discharges, 92 ft³/s, 6.9 in/yr, 66,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft³/s July 4, 1981, gage height, 23.14 ft; no flow Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft, discharge, about 15,000 ft³/s and flood of June 5, 1947 reached a stage of 21.65 ft, from floodmark, discharge, 11,000 ft³/s. A discharge of 0.08 ft³/s was measured on Oct. 30, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	1100	*5,530	*20.74	Dec. 28	1615	1,630	16.82
Dec. 6	0715	2,010	17.55	Apr. 2	2115	2,420	17.73

Minimum daily discharge, 0.44 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	36	229	160	51	82	532	24	32	88	.81	1.8
2	14	28	173	100	37	75	1980	63	23	49	.83	1.2
3	14	24	198	75	28	69	2040	40	865	23	.88	.96
4	15	21	162	59	23	56	1700	31	520	13	.91	.88
6	13	18	1040	50	19	77	1060	27	409	8.1	1.0	.82
6	15	16	1790	49	17	312	974	22	120	4.9	1.1	1.4
7	22	15	1320	45	14	337	644	33	54	3.2	1.1	1.6
8	98	15	1130	43	13	209	311	100	35	2.7	1.1	1.4
9	4330	15	263	38	14	102	459	71	25	2.2	1.0	1.1
10	1800	15	110	35	18	68	866	32	20	1.7	.95	1.1
11	1470	179	65	32	25	56	567	21	16	1.7	.95	1.2
12	783	622	46	29	29	53	622	20	13	1.8	.95	1.1
13	161	490	41	25	79	57	1230	20	11	1.8	.95	.97
14	79	435	39	25	400	56	1060	19	30	1.8	1.0	.86
15	53	108	37	28	600	52	627	20	75	1.8	.93	1.6
16	44	66	35	26	760	48	211	18	101	1.6	1.2	4.5
17	37	57	35	23	580	45	114	16	45	1.4	1.2	2.1
18	34	51	36	20	350	42	95	21	32	1.3	1.2	1.3
19	30	55	38	18	370	40	81	82	26	1.3	1.1	3.4
20	31	59	41	18	463	42	65	111	29	1.3	1.0	9.1
21	28	56	36	18	405	45	56	121	22	1.2	1.0	8.2
22	26	51	41	19	343	41	49	207	18	1.1	.89	2.6
23	25	50	46	20	259	44	43	240	14	1.1	.79	1.4
24	24	45	438	21	198	47	36	140	10	1.0	1.6	1.0
25	22	39	755	21	155	46	31	61	7.2	1.0	1.7	.89
26	21	37	612	20	126	69	28	41	6.0	.95	1.4	.83
27	19	34	429	19	104	733	25	28	5.2	.95	1.0	.81
28	20	365	1450	19	91	986	24	25	6.4	.88	.89	.76
29	60	535	780	81	---	1460	25	29	19	.88	.90	.59
30	73	470	708	120	---	1240	22	95	192	.88	2.3	.44
31	64	---	511	96	---	1010	---	71	---	.88	3.6	---
TOTAL	9430	4007	12635	1353	5561	7609	15577	1851	2781.8	222.42	36.23	55.91
MEAN	304	134	408	43.6	199	245	519	59.7	92.7	7.17	1.17	1.86
MAX	4330	622	1790	160	760	1460	2040	240	865	88	3.6	9.1
MIN	13	15	35	18	13	40	22	16	5.2	.88	.79	.44
CFSM	1.67	.74	2.24	.24	1.09	1.35	2.85	.33	.51	.04	.006	.01
IN.	1.93	.82	2.58	.28	1.14	1.56	3.18	.38	.57	.05	.01	.01
AC-FT	18700	7960	25060	2680	11030	15090	30900	3670	5520	441	72	111
CAL YR 1982	TOTAL	99000.80	MEAN 271	MAX 4330	MIN 6.8	CFSM 1.49	IN 20.24	AC-FT 196400				
WTR YR 1983	TOTAL	61119.36	MEAN 167	MAX 4330	MIN .44	CFSM .92	IN 12.49	AC-FT 121200				

06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW1/4 SW1/4 sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft downstream from bridge on county highway S50, 1.3 mi downstream from Jordan Creek and 4.3 mi northwest of Promise City.

DRAINAGE AREA.--168 mi².

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City district office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 120 ft³/s, 9.70 in/yr, 86,940 acre-ft/yr; median of yearly mean discharges, 100 ft³/s, 8.1 in/yr, 72,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,000 ft³/s July 4, 1981, gage height, 29.95 ft; no flow July 6, 7, 21-24, 28-31, and Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft, from floodmarks, discharge, about 18,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 9	2130	a 4,380	*20.57	Dec. 28	0815	3,970	17.74
Nov. 12	0130	4,140	17.99	Apr. 2	1645	*5,570	19.43
Dec. 5	2300	5,520	19.39	Apr. 12	2145	4,140	17.99

a Backwater from Rathbun reservoir.

Minimum daily discharge, 0.24 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	32	114	98	19	41	624	41	18	15	1.6	.62
2	13	27	146	74	16	39	4480	92	16	13	1.4	.55
3	17	20	155	72	15	37	1590	54	573	9.8	1.1	.62
4	25	22	87	57	14	37	237	39	99	8.6	1.5	.39
5	35	23	3190	42	13	47	648	31	46	6.0	1.2	.51
6	50	21	2820	44	12	206	788	29	36	5.0	1.3	.64
7	45	22	350	41	12	136	213	25	28	3.8	1.2	.88
8	400	21	189	40	11	68	123	24	23	2.9	1.0	.57
9	3760	20	170	35	13	42	684	23	20	2.7	.90	.44
10	1270	18	120	31	17	38	705	20	15	2.5	.77	.34
11	130	894	92	25	26	37	205	20	13	2.3	.64	.72
12	60	2720	70	23	33	38	1480	30	13	2.0	.53	.51
13	41	275	45	24	330	41	1940	31	13	2.0	.53	.34
14	33	126	43	23	1100	41	683	33	29	1.5	1.3	.34
15	27	94	40	22	691	38	262	35	31	1.5	1.0	3.4
16	24	79	39	20	737	36	133	28	17	1.4	.46	2.3
17	22	71	38	19	313	35	97	25	21	1.5	.42	1.4
18	20	65	44	17	192	32	98	29	18	1.5	.42	.88
19	20	72	49	15	322	32	90	54	23	1.5	.33	1.2
20	19	73	48	16	289	36	65	47	27	1.5	.26	3.1
21	19	57	48	21	193	37	60	120	17	1.3	.27	1.6
22	18	44	50	21	167	33	63	236	13	1.2	.37	1.4
23	17	49	62	22	138	38	51	69	11	1.2	.67	.80
24	16	45	863	21	92	38	43	38	8.0	1.4	.73	.88
25	15	39	796	20	72	37	38	43	6.0	1.5	.51	.99
26	15	40	196	19	64	60	35	28	8.0	1.4	.38	.88
27	14	38	307	17	57	1130	32	26	7.4	1.5	.30	.99
28	40	640	2840	40	44	1000	35	32	8.0	1.5	.31	.72
29	93	420	300	90	---	946	34	62	14	1.7	.48	.39
30	51	183	190	49	---	258	32	36	42	2.0	3.0	.24
31	38	---	130	25	---	211	---	23	---	1.9	1.6	---
TOTAL	6359	6250	13631	1083	5002	4845	15558	1423	1213.4	102.6	26.48	28.65
MEAN	205	208	440	34.9	179	156	519	45.9	40.4	3.31	.85	.96
MAX	3760	2720	3190	98	1100	1130	4480	236	573	15	3.0	3.4
MIN	12	18	38	15	11	32	32	20	6.0	1.2	.26	.24
CFSM	1.22	1.24	2.62	.21	1.07	.93	3.09	.27	.24	.02	.005	.006
IN.	1.41	1.38	3.02	.24	1.11	1.07	3.44	.32	.27	.02	.01	.01
AC-FT	12610	12400	27040	2150	9920	9610	30860	2820	2410	204	53	57
CAL YR 1982	TOTAL	106705.70	MEAN 292	MAX 6410	MIN 8.4	CFSM 1.74	IN 23.63	AC-FT 211700				
WTR YR 1983	TOTAL	55522.13	MEAN 152	MAX 4480	MIN .24	CFSM .91	IN 12.29	AC-FT 110100				

CHARITON RIVER BASIN

06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi north of Rathbun and 3.9 mi upstream from Walnut Creek and at mile 142.3.

DRAINAGE AREA.--549 mi².

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gates, 6 ft wide and 12 ft high, into forechamber of an 11-ft diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft³/s. Uncontrolled notch spillway is concrete overflow section 500 ft in length, located about 3,000 ft west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft, contents 545,621 acre-ft, surface area, 20,974 acres. Conservation pool level is at elevation 904.0 ft, contents 199,830 acre-ft, surface area, 10,989 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 514,000 acre-ft July 22, 23, 1982; maximum elevation, 924.46 ft July 22, 1982; minimum daily contents, 100 acre-ft Oct. 1-15, Nov. 17-21, 1969; minimum elevation, 855.40 ft Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 436,000 acre-ft Oct. 11-13; maximum elevation 920.42 ft Oct. 12; minimum daily contents, 168,000 acre-ft Sept. 28-30; minimum elevation, 901.00 ft Sept. 30.

Capacity table (elevation, in feet, and contents, in acre-feet)

860	150	880	31,900	905	211,000
862	226	885	52,700	910	272,600
865	950	890	80,300	915	345,000
870	5,870	895	115,600	920	428,900
875	17,000	900	158,800	925	524,900

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	413000	391000	358000	372000	291000	243000	225000	287000	248000	211000	176000	172000
2	410000	389000	358000	370000	289000	241000	235000	288000	247000	209000	176000	172000
3	408000	387000	358000	367000	287000	238000	254000	286000	248000	208000	176000	172000
4	407000	384000	357000	364000	283000	235000	264000	285000	249000	206000	176000	172000
5	407000	382000	361000	361000	280000	233000	269000	283000	249000	205000	176000	171000
6	407000	379000	375000	358000	278000	232000	274000	281000	249000	203000	175000	171000
7	405000	376000	385000	358000	275000	231000	279000	280000	248000	201000	175000	171000
8	402000	374000	389000	356000	272000	230000	281000	279000	246000	199000	175000	171000
9	408000	372000	390000	353000	269000	228000	282000	277000	245000	197000	175000	171000
10	429000	370000	388000	352000	266000	225000	287000	275000	243000	195000	175000	170000
11	436000	368000	385000	351000	263000	222000	290000	274000	241000	194000	174000	171000
12	436000	373000	382000	346000	260000	219000	291000	273000	240000	192000	174000	171000
13	436000	383000	379000	344000	258000	216000	298000	273000	238000	190000	174000	170000
14	434000	385000	379000	342000	257000	214000	306000	272000	237000	188000	174000	170000
15	431000	383000	374000	338000	259000	211000	307000	270000	235000	186000	173000	170000
16	429000	381000	371000	335000	261000	208000	307000	269000	233000	184000	173000	170000
17	426000	379000	368000	332000	262000	206000	306000	267000	232000	182000	173000	170000
18	423000	376000	366000	329000	262000	203000	306000	264000	231000	181000	173000	170000
19	421000	374000	364000	326000	262000	201000	305000	265000	229000	179000	173000	169000
20	421000	372000	360000	323000	261000	200000	303000	263000	228000	179000	172000	171000
21	416000	370000	357000	321000	261000	200000	302000	262000	226000	179000	172000	170000
22	414000	368000	355000	318000	259000	200000	301000	262000	225000	179000	172000	170000
23	411000	367000	352000	315000	258000	200000	300000	261000	223000	178000	172000	169000
24	408000	364000	351000	312000	256000	200000	299000	260000	221000	178000	172000	169000
25	406000	361000	355000	309000	254000	200000	297000	259000	220000	178000	172000	168000
26	404000	359000	357000	306000	251000	199000	294000	257000	218000	178000	172000	169000
27	401000	356000	358000	303000	249000	204000	294000	256000	216000	177000	172000	169000
28	399000	356000	367000	300000	246000	210000	292000	254000	215000	177000	171000	168000
29	398000	358000	373000	298000	---	215000	291000	254000	213000	177000	171000	168000
30	395000	358000	375000	295000	---	221000	289000	251000	212000	177000	172000	168000
31	393000	---	374000	294000	---	223000	---	250000	---	177000	173000	---
MAX	436000	391000	390000	372000	291000	243000	307000	288000	249000	211000	176000	172000
MIN	393000	356000	351000	294000	246000	199000	225000	250000	212000	177000	171000	168000

WTR YR 1983 MAX 436000 MIN 168000

06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in SE1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, on left bank 600 ft downstream from outlet of Rathbun Dam, 1.8 mi north of Rathbun and 3.7 mi upstream from Walnut Creek and at mile 142.1.

DRAINAGE AREA.--549 mi².

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1730.

REVISED RECORDS.--WSP 1560: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft NGVD. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960, to Sept. 30, 1969, recording gage, at site 3.1 mi downstream at datum 4.65 ft lower.

REMARKS.--Records good. Flow regulated by Rathbun Reservoir (station 06903880) since Nov. 21, 1969. Records of discharge include diversion of 15 ft³/s Oct. 1 to Nov. 5; 13 ft³/s Nov. 6 to June 20; 10 ft³/s June 21; 9 ft³/s June 22 to July 12; 8 ft³/s July 13; 9 ft³/s July 14 to Aug. 31; and 11 ft³/s Sept. 1 to Sept. 30 from reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi downstream from gage. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station. Rathbun Regional Water Association permit No. 3663 allows withdrawal from Rathbun Dam discharge immediately downstream from gage for maximum rate of 4,200 gpm (9.36 ft³/s) and maximum quantity of 638 million gallons per year (1,955 acre-ft).

AVERAGE DISCHARGE.--27 years, 344 ft³/s, 8.51 in/yr, 249,200 acre-ft/yr; median of yearly mean discharges, 270 ft³/s, 6.7 in/yr, 196,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft³/s Mar. 31, 1960, gage height, 25.3 ft from flood-mark, site and datum then in use; no flow Oct. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,570 ft³/s Feb. 14, gage height, 13.35 ft; minimum daily, 18 ft³/s August 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	1220	1190	1520	1480	1430	683	779	758	755	21	22
2	1220	1220	1020	1510	1480	1480	892	777	757	753	21	22
3	848	1230	974	1510	1480	1480	588	770	795	754	20	22
4	49	1230	952	1510	1470	1470	52	768	762	753	20	22
5	45	1230	998	1500	1470	1470	49	768	757	750	20	22
6	43	1220	412	1120	1330	1520	52	768	755	748	20	23
7	43	1220	53	377	1460	1490	43	769	755	748	20	23
8	43	1220	427	1240	1460	1470	404	768	754	779	20	22
9	43	1210	1160	1240	1450	1460	495	767	753	797	20	22
10	43	1210	1480	1370	1450	1450	66	767	752	795	20	21
11	93	870	1480	1480	1450	1450	391	768	751	794	20	22
12	1210	65	1470	1480	1450	1450	783	768	750	792	21	22
13	1210	40	1470	1480	1510	1450	820	443	749	789	21	22
14	1200	537	1470	1470	1540	1450	806	733	747	789	21	22
15	1200	1260	1470	1360	1520	1440	789	768	744	787	21	23
16	1210	1260	1470	1480	1500	1440	781	768	763	784	21	22
17	1200	1260	1460	1460	1470	1440	777	765	780	782	27	22
18	1200	1260	1470	1460	1470	1280	777	765	778	626	22	22
19	1210	1260	1460	1460	1470	835	776	767	779	216	21	22
20	1220	1260	1460	1460	1460	615	776	770	776	24	21	22
21	1210	1250	1460	1450	1460	47	775	767	772	23	21	23
22	1210	1250	1460	1450	1470	42	774	770	769	22	21	22
23	1220	1250	1460	1450	1450	43	772	768	768	21	22	22
24	1220	1240	1230	1440	1440	43	772	767	766	21	22	21
25	1220	1240	489	1440	1440	43	772	770	763	21	19	22
26	1220	1240	436	1440	1440	45	768	770	762	21	19	21
27	1220	1240	335	1460	1440	159	763	770	760	21	18	21
28	1220	1190	177	1480	1430	117	762	770	758	21	19	21
29	1220	892	230	1480	---	47	768	767	756	21	19	22
30	1220	874	817	1480	---	438	772	760	756	21	20	21
31	1220	---	1390	1480	---	870	---	760	---	20	20	---
TOTAL	27940	32948	32830	43537	40940	29434	18498	23455	22845	14248	638	658
MEAN	901	1098	1059	1404	1462	949	617	757	762	460	20.6	21.9
MAX	1220	1260	1480	1520	1540	1520	892	779	795	797	27	23
MIN	43	40	53	377	1330	42	43	443	744	20	18	21
AC-FT	55420	65350	65120	86360	81200	58380	36690	46520	45310	28260	1270	1310
CAL YR 1982	TOTAL	255215	MEAN 699	MAX 1510	MIN 23	CFSM 1.27	IN 17.29	AC-FT 506200				
WTR YR 1983	TOTAL	287971	MEAN 789	MAX 1540	MIN 18	CFSM 1.44	IN 19.51	AC-FT 571200				

CHARITON RIVER BASIN

06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in SE1/4 NE1/4 sec.14, T.68N., R.17W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft downstream from bridge on county highway J45, 0.7 mi downstream from Hickory Creek, 5.0 mi west of Moulton, 8.0 mi upstream from Iowa-Missouri border, 20.8 mi downstream from Rathbun dam, and at mile 121.5.

DRAINAGE AREA.--740 mi².

PERIOD OF RECORD.--August 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi upstream. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s July 16, 1982, gage height, 36.83 ft; minimum daily, 19 ft³/s Oct. 26, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft, discharge unknown, from information by Corps of Engineers.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 6,470 ft³/s Apr. 2, gage height, 34.16 ft; minimum daily, 22 ft³/s August 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1220	1200	917	1620	1570	1490	1510	853	798	818	34	29		
2	1210	1210	2400	1660	1560	1490	5800	1020	800	812	33	28		
3	1190	1190	1810	1640	1550	1530	5050	929	1450	807	32	27		
4	427	1180	1170	1640	1530	1540	1800	871	1030	810	31	27		
5	92	1170	3590	1640	1530	1570	868	853	834	807	31	26		
6	91	1160	4140	1630	1530	2320	1280	851	802	802	29	27		
7	1080	1160	1450	516	1510	2180	550	848	787	803	29	28		
8	1230	1160	376	832	1510	1780	273	838	779	809	28	26		
9	1080	1160	758	1260	1510	1620	1560	833	773	859	28	27		
10	370	1150	1540	1300	1510	1550	1590	830	769	862	27	27		
11	1000	1620	1640	1560	1520	1520	496	830	766	864	27	28		
12	1240	2690	1600	1580	1520	1520	866	780	763	864	26	26		
13	1220	615	1590	1590	1770	1530	1630	185	763	860	26	26		
14	1210	164	1590	1580	2700	1520	1580	681	764	860	29	26		
15	1210	961	1590	1600	2640	1510	1300	848	760	858	31	32		
16	1200	1270	1570	1600	2690	1500	1010	823	764	855	30	46		
17	1200	1260	1570	1550	2290	1490	943	805	816	852	29	32		
18	1190	1250	1580	1550	1950	1480	940	807	856	835	27	30		
19	1200	1250	1580	1600	1900	921	931	1170	977	483	26	28		
20	1210	1260	1570	1540	1900	695	921	924	832	146	28	30		
21	1200	1240	1550	1510	1800	278	908	900	817	42	31	32		
22	1190	1230	1550	1510	1820	66	895	937	810	37	29	29		
23	1190	1240	1560	1510	1880	53	890	898	807	37	30	28		
24	1190	1220	1930	1510	1740	51	877	843	805	37	26	27		
25	1180	1210	2160	1500	1610	51	869	823	805	36	27	28		
26	1180	1200	751	1530	1550	60	866	805	802	36	25	27		
27	1180	1190	474	1550	1530	1800	858	800	805	36	23	25		
28	1190	1700	1880	1570	1510	2300	856	800	805	36	22	25		
29	1210	1570	793	1580	---	898	853	792	809	36	23	23		
30	1200	1020	434	1610	---	336	853	782	818	35	44	23		
31	1190	---	1160	1600	---	822	---	802	---	35	52	---		
TOTAL	32970	36900	48273	46458	49630	37471	39623	25761	24966	16069	913	843		
MEAN	1064	1230	1557	1499	1773	1209	1321	831	832	518	29.5	28.1		
MAX	1240	2690	4140	1660	2700	2320	5800	1170	1450	864	52	46		
MIN	91	164	376	516	1510	51	273	185	760	35	22	23		
AC-FT	65400	73190	95750	92150	98440	74320	78590	51100	49520	31870	1810	1670		
CAL YR 1982	TOTAL	436093	MEAN	1195	MAX	8720	MIN	48	CFSM	1.62	IN	21.92	AC-FT	865000
WTR YR 1983	TOTAL	359877	MEAN	986	MAX	5800	MIN	22	CFSM	1.33	IN	18.09	AC-FT	713800

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1983

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Upper Iowa River Basin							
05388310	Waterloo Creek near Dorchester, Ia.	Lat 43°27'04", long 91°30'18", in NW1/4 sec.25, T.100 N., R.6 W., Allamakee County, on State Highway 76, 1.4 mi south of Dorchester.	43.6	1966-	1983	a	(+)
Wexford Creek Basin							
05388400	Wexford Creek near Harpers Ferry, Ia.	Lat 43°16'22", long 91°08'00", in SE1/4 sec.25, T.98 N., R.3 W., Allamakee County, at bridge, 5 mi north of Harpers Ferry on county highway X52.	11.9	1953-	09-22-83	8.56	4,500
Paint Creek Basin							
05388600	Paint Creek near Waterville, Ia.	Lat 43°10'24", long 91°15'42", near center sec.36, T.97 N., R.4 W., Allamakee County, at bridge on county highway, 3 mi southeast of Waterville.	56.0	1953-	09-22-83	11.34	2,800
05388700	Little Paint Creek tributary near Waterville, Ia.	Lat 43°14'23", long 91°15'07", in SE1/4 sec.1, T.97 N., R.4 W., Allamakee County, at culvert on county highway, 3.5 mi northeast of Waterville.	1.09	1953-	09-22-83	2.46	160
Turkey River Basin							
05411530	North Branch Turkey River near Cresco, Ia.	Lat 43°22'15", long 92°12'49", in NW1/4 sec.25, T.99 N., R.12 W., Howard County, at bridge on state highway 9, 5 mi west of Cresco.	19.5	1966-	11-12-82	92.19	3,400
05411700	Crane Creek near Lourdes, Ia.	Lat 43°14'57", long 92°18'32", in SE1/4 NW1/4 sec.6, T.97 N., R.12 W., Howard County, at bridge on State Highway 272, 1 mi southwest of Lourdes.	75.8	1951-	11-12-82	10.60	2,650
Little Maquoketa River Basin							
05414350	Little Maquoketa River near Graf, Ia.	Lat 42°30'09", long 90°51'50", in SE1/4 sec.20, T.89 N., R.1 E., Dubuque County, at bridge on county highway, 300 ft downstream from Illinois Central railroad bridge, 0.5 mi northeast of Graf.	39.6	1951-	1983	a	(+)
05414400	Middle Fork Little Maquoketa River near Rickardsville, Ia.	Lat 42°33'38", long 90°51'35", in SE1/4 sec.32, T.90 N., R.1 E., Dubuque County, at bridge on county highway, 2 mi southeast of Rickardsville.	30.2	1951-	1983	a	(+)
05414450	North Fork Little Maquoketa River near Rickardsville, Ia.	Lat 42°35'09", long 90°51'20", near NW corner sec.28, T.90 N., R.1 E., Dubuque County, at bridge on county highway, 1 mi northeast of Rickardsville.	21.6	1951-	1983	a	(+)
05414500	Little Maquoketa River near Durango, Ia.	Lat 42°33'18", long 90°44'46", in NW1/4 NE1/4 sec. 5, T.89 N., R.2 E., Dubuque County, on left bank 10 ft (3 m) upstream from bridge on county highway, 300 ft (91 m) upstream from Cloie Branch, 1.7 mi (2.7 km) east of Durango, 5.6 mi (9.0 km) northwest of court house at Dubuque and 6.4 mi (10.3 km) upstream from mouth.	130	1934-	07-08-83	10.38	2,760
05414600	Little Maquoketa River tributary at Dubuque, Ia.	Lat 42°32'33", long 90°41'38", near NW corner sec.11, T.89 N., R.2 E., Dubuque County at bridge on State Highway 386, near north city limits of Dubuque.	1.54	1951-	1983	a	(+)
Maquoketa River Basin							
05417000	Maquoketa River near Manchester, Ia.	Lat 42°27'22", long 91°25'56", in NW1/4 NE1/4 sec.9, T.88 N., R.5 W., Delaware County on left bank, 0.6 mi downstream from Sand Creek, 1.5 mi upstream from Spring Branch 2.3 mi southeast of Manchester, and at mile 100.5.	305	1933-73, 1976-	11-12-82	9.34	2,890
05417530	Plum Creek at Earlville, Ia.	Lat 42°28'13", long 91°14'53", in NE1/4 sec.1, T.88 N., R.4 W., Delaware County, at bridge on U.S. Highway 20, 1.5 mi southeast of Earlville.	41.1	1966-	11-12-82	83.01	75
05417590	Kitty Creek near Langworthy, Ia.	Lat 42°12'04", long 91°12'27", in NW1/4 sec.4, T.85 N., R.3 W., Jones County, at bridge on U.S. Highway 151, 1 mi northeast of Langworthy.	14.4	1966-	1983	a	(+)

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Wapsipinicon River Basin							
05420600	Little Wapsipinicon River tributary near Riceville, Ia.	Lat 43°21'31", long 92°29'08", near S1/4 corner sec.27, T.99 N., R.14 W., Howard County, at culvert on county highway, 3.5 mi east of Riceville.	0.90	1953-	11-12-82	4.46	230
05420620	Little Wapsipinicon River near Acme, Ia.	Lat 43°19'37", long 92°29'07", near N1/4 corner sec.10, T.98 N., R.14 W., Howard County, at bridge on county highway, 1 mi north of Acme.	7.76	1953-	11-12-82	4.95	315
05420640	Little Wapsipinicon River at Elma, Ia.	Lat 43°14'30", long 92°27'04", in NW1/4 sec.12, T.97 N., R.14 W., Howard County, at bridge on county highway B17, near west city limits of Elma.	37.3	1953-	04-15-83	9.13	1,080
05420650	Little Wapsipinicon River near New Hampton, Ia.	Lat 43°03'58", long 92°23'38", in NW1/4 sec.9, T.95 N., R.13 W., Chickasaw County, at bridge on U.S. Highway 18, 4 mi west of New Hampton.	95.0	1966-	05-19-83	86.74	1,800
05420690	East Fork Wapsipinicon River near New Hampton, Ia.	Lat 43°05'11", long 92°18'22", in SE1/4 sec.31, T.96 N., R.12 W., Chickasaw County, at bridge on U.S. Highway 63, 2 mi north of New Hampton.	30.3	1966-	05-19-83	83.87	1,000
05420850	Little Wapsipinicon River near Oran, Ia.	Lat 42°42'53", long 92°02'29", near NW corner sec.9, T.91 N., R.10 W., Fayette County at bridge on State Highway 3, 2 mi northeast of Oran.	94.1	1966-	07-01-83	89.37	2,000
05420855	Buck Creek near Oran, Ia.	Lat 42°42'53", long 92°07'33", in NE1/4 sec.10, T.91 N., R.11 W., Bremer County, at bridge on State Highway 3, 2.5 mi northwest of Oran.	37.9	1966-	07-01-83	88.96	820
05421100	Pine Creek tributary near Winthrop, Ia.	Lat 42°29'17", long 91°47'10", in SW1/4 sec.27, T.89 N., R.8 W., Buchanan County, at culvert on county highway, 2.5 mi northwest of Winthrop.	0.334	1953-	07-01-83	5.65	102
	Pine Creek near Winthrop, Ia.	Lat 42°28'11", long 91°47'01", in SW1/4 sec.34, T.89 N., R.8 W., Buchanan County, at railroad bridge, 500 ft upstream from U.S. Highway 20, and 2.5 mi northwest of Winthrop.	28.3	1950-	11-12-82	12.09	560
05421300	Pine Creek tributary No. 2 at Winthrop, Ia.	Lat 42°28'06", long 91°44'33", at N1/4 corner sec.2, T.88 N., R.8 W., Buchanan County, at culvert on U.S. Highway 20, near west city limits of Winthrop.	0.704	1953-	11-12-82	5.15	13
05421550	Buffalo Creek above Winthrop, Ia.	Lat 42°29'51", long 91°43'42", near NE corner sec.25, T.89 N., R.8 W., Buchanan County, at bridge on county highway W45, 1.5 mi northeast of Winthrop.	68.2	1957-	07-01-83	15.78	590
05421600	Buffalo Creek near Winthrop, Ia.	Lat 42°28'07", long 91°43'04" in NE1/4 sec.1, T.88 N., R.8 W., Buchanan County, at bridge on U.S. Highway 20, 1 mi east of Winthrop.	71.4	1953-	1983	a	(+)
05421890	Silver Creek at Welton, Ia.	Lat 41°54'54", long 90°36'00", in NW1/4 sec.15, T.82 N., R.3 E., Clinton County, at bridge on U.S. Highway 61, at north edge of Welton.	9.03	1966-	12-02-82	86.95	(+)
Iowa River Basin							
05448400	Westmain drainage ditch 1 & 2 near Britt, Ia.	Lat 43°06'09", long 93°47'04", in SW1/4 sec.27, T.96 N., R.25 W., Hancock County, at bridge on U.S. Highway 18, near east city limits of Britt.	21.2	1966-	1983	a	(+)
05448600	East Branch Iowa River above Hayfield, Ia.	Lat 43°09'21", long 93°41'21", near S1/4 corner sec.4, T.96 N., R.24 W., Hancock County, at bridge on county highway, 1.5 mi southeast of Hayfield.	2.23	1953-	02-20-83 09-19-83	66.72 3.32	(+) 25
05448700	East Branch Iowa River near Hayfield, Ia.	Lat 43°10'50", long 93°39'20", in NW1/4 sec.35, T.97 N., R.24 W., Hancock County, at bridge on county highway B20, 2 mi east of Hayfield.	7.94	1952-	06-28-83	8.02	345
05448800	East Branch Iowa River near Garner, Ia.	Lat 43°06'17", long 93°37'20", near center sec.25, T.96 N., R.24 W., Hancock County, at bridge on U.S. Highway 18, 1.2 mi west of Garner.	45.1	1952-	06-28-83	10.11	390

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Iowa River Basin--Continued							
05448900	East Branch Iowa River tributary near Garner, Ia.	Lat 43°06'18", long 93°39'29", near E1/4 corner sec.27, T.96 N., R.24 W., Hancock County, at culvert on U.S. Highway 18, 2.1 mi west of Garner.	5.98	1952-	04-13-83	4.51	71
05451955	Stein Creek near Clutier, Ia.	Lat 42°04'46", long 92°18'00", in NE1/4 sec.24, T.84 N., R.13 W., Tama County, at bridge on State Highway 318, 5 mi east of Clutier.	23.4	1971-	11-02-82	72.41	700
05453200	Price Creek at Amana, Ia.	Lat 41°48'18", long 91°52'23", in SE1/4 sec.22, T.81 N., R.9 W., Iowa County, at bridge on State Highway 149, near north edge of Amana.	29.1	1966-	05-02-83	84.35	2,400
05453600	Rapid Creek below Morse, Ia.	Lat 41°43'45", long 91°25'38", near NE corner sec.21, T.80 N., R.5 W., Johnson County, at bridge on county highway, 1.5 mi southeast of Morse.	8.12	1951-	06-28-83	20.56	790
05453750	Rapid Creek south-west of Morse, Ia.	Lat 41°43'23", long 91°26'16", in W1/2 sec. 21, T.80 N., R.5 W., Johnson County, at bridge on county highway, 2 mi southwest of Morse.	15.2	1951-	06-28-83	25.32	1,100
05453850	Rapid Creek tributary No. 3 near Oasis, Ia.	Lat 41°42'33", long 91°27'14", near center sec. 29, T.80 N., R.5 W., Johnson County, at bridge on county highway, 3.5 mi west of Oasis.	1.62	1951-	07-18-82 06-28-83	19.71	c580 145
05453900	Rapid Creek tributary near Oasis, Ia.	Lat 41°41'14", long 91°26'37", near SW corner sec.33, T.80 N., R.5 W., Johnson County, at bridge on county highway X16, 3 mi southwest of Oasis.	0.97	1951-	12-02-82	12.88	105
05453950	Rapid Creek tributary near Iowa City, Ia.	Lat 41°41'56", long 91°28'39", in NW1/4 sec.31, T.80 N., R.5 W., Johnson County, at bridge on county highway, 4 mi north-east of Iowa City.	3.43	1951-	06-28-83	23.44	450
05455100	Old Mans Creek near Iowa City, Ia.	Lat 41°36'23", long 91°36'56", in NW1/4 sec.36, T.79 N., R.7 W., Johnson County, at bridge on county highway W62, 3 mi southwest of Iowa City.	201	1950-64, 1965-	06-28-83	10.96	1,900
05455140	North English River near Montezuma, Ia.	Lat 41°38'45", long 92°34'20", in SW1/4 sec.14, T.79 N., R.15 W., Poweshiek County, at bridge on county highway, 5.0 mi northwest of Montezuma.	31.0	1972-	11-11-82	26.00	2,800
05455200	North English River near Guernsey, Ia.	Lat 41°38'47", long 92°23'47", near SW corner sec.17, T.79 N., R.13 W., Poweshiek County, at bridge on county highway V21, 2.2 mi west of Guernsey.	68.7	1953-	07-03-83	12.37	2,700
05455210	North English River at Guernsey, Ia.	Lat 41°38'42", long 92°21'28", at NW corner sec.22, T.79 N., R.13 W., Poweshiek County at bridge on State Highway 21, 1 mi southwest of Guernsey.	81.5	1960, 1966-	06-15-82 07-03-83	87.43 84.84	c4,400 2,900
05455230	Deep River at Deep River, Ia.	Lat 41°35'29", long 92°21'18", in SW1/4 sec.3, T.78 N., R.13 W., Poweshiek County, at bridge on State Highway 21, 1 mi northeast of Deep River.	30.5	1960, 1966-	11-11-82	80.46	1,050
05455300	South English River near Barnes City, Ia.	Lat 41°31'26", long 92°27'56", near NW corner sec.34, T.78 N., R.14 W., Poweshiek County, at bridge on county highway, 1 mi north of Barnes City.	11.5	1953-	07-03-83	12.97	1,200
05455350	South English River tributary No. 2 near Montezuma, Ia.	Lat 41°34'02", long 92°27'01", near SW corner sec.11, T.78 N., R.14 W., Poweshiek County, at box culvert on county highway, 4 mi southeast of Montezuma.	0.523	1953-	07-03-83	12.60	210
05455550	Bulgiers run near Riverside, Ia.	Lat 41°29'02", long 91°37'36", in SE1/4 sec.11, T.77 N., R.7 W., Washington County, at bridge on State Highway 22, 2.5 mi west of Riverside.	6.31	1965	12-05-82	87.43	1,900
05457440	Deer Creek near Carpenter, Ia.	Lat 43°24'54", long 92°59'05", at NW corner sec.9, T.99 N., R.18 W., Mitchell County, at bridge on State Highway 105, 1.5 mi east of Carpenter.	91.6	1966-	03-06-83	80.44	1,250
05458560	Beaverdam Creek near Sheffield, Ia.	Lat 42°56'11", long 93°12'09", at NW corner sec.27, T.94 N., R.20 W., Cerro Gordo County, at bridge on U.S. Highway 65, 3 mi north of Sheffield.	123	1966-	06-29-83	56.53	2,080
05459010	Elk Creek at Kensett, Ia.	Lat 43°22'18", long 93°12'37", in NE1/4 sec.28, T.99 N., R.20 W., Worth County, at bridge on U.S. Highway 65, 1 mi north of Kensett.	58.1	1966-	02-20-83	90.81	540

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Iowa River Basin--Continued							
05459490	Spring Creek near Mason City, Ia.	Lat 43°12'48", long 93°12'38", in SE1/4 sec.16, T.97 N., R.20 W., Cerro Gordo County, at bridge on U.S. Highway 65, 4 mi north of Mason City.	29.3	1966-	06-28-83	86.81	960
05460100	Willow Creek near Mason City, Ia.	Lat 43°08'55", long 93°16'07", near center sec.12, T.96 N., R.21 W., Cerro Gordo County, at bridge on U.S. Highway 18, 3.5 mi west of Mason City.	78.6	1966-	09-20-83	90.19	630
05462750	Beaver Creek tributary near Aplington, Ia.	Lat 42°34'40", long 92°50'49", in NW1/4 sec.27, T.90 N., R.17 W., Butler County, at bridge on U.S. Highway 20, 2 mi east of Aplington.	11.6	1966-	05-19-83	94.27	(+)
05463090	Black Hawk Creek at Grundy Center, Ia.	Lat 42°22'10", long 92°46'05", in NW1/4 sec.7, T.87 N., R.16 W., Grundy County, at bridge on State Highway 14, at north edge of Grundy Center.	56.9	1966-	05-19-83	87.94	2,250
05464145	Twelve Mile Creek near Traer, Ia.	Lat 42°13'50", long 92°27'56", in SE1/4 sec.27, T.86 N., R.14 W., Tama County, at bridge on U.S. Highway 63, 2.5 mi north of Traer.	43.8	1966-	04-14-83	86.70	1,100
05464310	Pratt Creek near Garrison, Ia.	Lat 42°10'53", long 92°11'10", in SE1/4 sec.12, T.85 N., R.12 W., Benton County, at bridge on U.S. Highway 218, 3.5 mi northwest of Garrison.	23.4	1966-	11-02-82	88.69	1,050
05464318	East Blue Creek at Center Point, Ia.	Lat 42°12'44", long 91°47'21", in SW1/4 sec.33, T.86 N., R.8 W., Linn County, at bridge on State Highway 150, 1.5 mi north of Center Point.	17.6	1966-	1983	a	(+)
05464560	Prairie Creek at Blairstown, Ia.	Lat 41°54'42", long 92°05'03", in SW1/4 sec.13, T.82 N., R.11 W., Benton County, at bridge on State Highway 82, at north edge of Blairstown.	87.0	1966-	07-03-83	82.57	2,300
05464880	Otter Creek at Wilton, Ia.	Lat 41°36'17", long 91°02'08", in NE1/4 sec.35, T.79 N., R.2 W., Cedar County, at bridge on State Highway 38, 1.5 mi northwest of Wilton.	10.7	1966-	04-02-83	83.15	340
05465150	North Fork Long Creek at Ainsworth, Ia.	Lat 41°16'51", long 91°32'16", in SW1/4 sec.22, T.75 N., R.6 W., Washington County, at bridge on U.S. Highway 218, 1 mi southeast of Ainsworth.	30.2	1951, 1965-	04-02-83	88.68	960
Skunk River Basin							
05469860	Mud Lake drainage ditch 71 in Jewell, Ia.	Lat 42°18'52", long 93°38'23", in SW1/4 sec.27, T.87 N., R.24 W., Hamilton County, at bridge on U.S. Highway 69, in Jewell.	65.4	1966-	07-02-83	89.33	1,760
05469990	Keigley Branch near Story City, Ia.	Lat 42°09'01", long 93°37'13", in NW1/4 sec.26, T.85 N., R.24 W., Story County, at bridge on U.S. Highway 69, 3 mi south of Story City.	31.0	1966-	05-18-83	88.13	340
05472090	North Skunk River near Baxter, Ia.	Lat 41°49'13", long 93°03'41", in NE1/4 sec.21, T.81 N., R.19 W., Jasper County, at bridge on State Highway 223, 4.5 mi east of Baxter.	52.2	1966-	1983	a	(+)
05472290	Sugar Creek near Searsboro, Ia.	Lat 41°34'26", long 92°44'20", at E1/4 corner sec.7, T.78 N., R.16 W., Poweshiek County, at bridge on State Highway 225, 1.8 mi west of Searsboro.	52.7	1966-	07-03-83	90.70	1,150
05472390	Middle Creek near Lacey, Ia.	Lat 41°25'17", long 92°39'04", near N1/4 corner sec.1, T.76 N., R.16 W., Mahaska County, at bridge on U.S. Highway 63, 1.5 mi northwest of Lacey.	23.0	1966-	11-11-82	85.44	710
05472445	Rock Creek at Sigourney, Ia.	Lat 41°20'12", long 92°13'20", in NE1/4 sec.3, T.75 N., R.12 W., Keokuk County, at bridge on State Highway 92, near west edge of Sigourney.	26.3	1966-	12-05-82	88.81	840
05473300	Cedar Creek near Batavia, Ia.	Lat 41°00'34", long 92°07'06", in SW1/4 sec.27, T.72 N., R.11 W., Jefferson County, at bridge on U.S. Highway 34, 2.5 mi northeast of Batavia.	252	1966-	04-14-81 07-03-82 04-02-83	81.30 81.45 83.22	c5,050 c5,400 6,700

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Des Moines River Basin							
05480930	White Fox Creek at Clarion, Ia.	Lat 42°43'55", long 93°42'26", in NW1/4 sec.5, T.91 N., R.24 W., Wright County, at bridge on State Highway 3, 1.5 mi east of Clarion.	13.3	1966-	09-20-83	90.53	380
05481510	Bluff Creek at Pilot Mound, Ia.	Lat 42°09'59", long 94°01'15", in NW 1/4 sec.20, T.85 N., R.27 W., Boone County, at bridge on State Highway 329, at northwest edge of Pilot Mound.	23.5	1966-	02-19-83	84.52	335
05481680	Beaver Creek at Beaver, Ia.	Lat 42°02'04", long 94°08'46", in NE1/4 sec.6, T.83 N., R.28 W., Boone County, at bridge on U.S. Highway 30, at southwest edge of Beaver.	38.5	1966-	02-19-83 03-07-83	b89.28 88.07	(+) 570
05481690	West Beaver Creek at Grand Junction, Ia.	Lat 42°01'56", long 94°12'38", in NE1/4 sec.3, T.83 N., R.29 W., Greene County, at bridge on U.S. Highway 30, near east edge of Grand Junction.	12.6	1966-	06-29-83	87.27	2,500
05482600	Hardin Creek at Farnhamville, Ia.	Lat 42°16'01", long 94°25'10", near NE corner sec.14, T.86 N., R.31 W., Calhoun County, at bridge on State Highway 175, near west city limits of Farnhamville.	43.7	1952-	06-28-83	9.90	1,300
05482800	Happy Run at Churdan, Ia.	Lat 42°10'16", long 94°29'39", in SW1/4 sec.17, T.85 N., R.31 W., Greene County, at bridge on county highway, 1 mi northwest of Churdan.	7.58	1952-	02-20-83 03-27-83	5.01 b9.39	50 (+)
05482900	Hardin Creek near Farlin, Ia.	Lat 42°05'34", long 94°25'39", near N1/4 corner sec.14, T.84 N., R.31 W., Greene County, at bridge on county highway, 1.5 mi northeast of Farlin.	101	1951-	02-19-83	10.15	1,040
05483318	Brushy Fork Creek near Templeton, Ia.	Lat 41°56'45", long 94°52'45", in NW1/4 sec.1, T.82 N., R.35 W., Carroll County, at bridge on U.S. Highway 71, 4 mi northeast of Templeton.	45.0	1966-	1983	a	(+)
05483349	Middle Raccoon River tributary at Carroll, Ia.	Lat 42°02'30", long 94°52'43", in NW1/4 sec.36, T.84 N., R.35 W., Carroll County, at bridge on U.S. Highway 71, 1.5 mi south of Carroll.	5.58	1966-	06-27-83	22.76	(+)
05487350	South Otter Creek tributary near Woodburn, Ia.	Lat 41°02'48", long 93°35'26" near SW corner sec.11, T.72 N., R.24 W., Clarke County, at bridge on county highway, 2 mi north of Woodburn.	0.71	1955-	04-01-83	10.40	(+)
05487800	White Breast Creek at Lucas, Ia.	Lat 41°01'24", long 93°27'56", in NE1/4 sec.23, T.72 N., R.23 W., Lucas County, at bridge on U.S. Highway 65, near south city limits of Lucas.	128	1953-	04-01-83	14.73	3,100
05488520	Coal Creek near Albia, Ia.	Lat 41°01'02", long 92°50'46", in SW1/4 sec.20, T.72 N., R.17 W., Monroe County, at bridge on U.S. Highway 34, 2 mi southwest of Albia.	13.5	1966-	05-12-66 06-09-67 1968 1969 09-24-70 02-17-71 02-02-72 07-04-73 06-09-74 1975 04-24-76 08-08-77 05-07-78 03-24-79 06-02-80 07-04-81 07-03-82 10-09-82	78.02 84.61 a a 79.92 77.38 78.92 81.44 81.92 a 82.07 86.90 80.09 77.77 82.95 82.56 88.51 79.99	360 4,500 (+) (+) 880 250 570 1,600 1,900 (+) 2,100 8,500 920 320 2,800 2,400 12,700 920
05489150	Little Muchakinock Creek at Oskaloosa, Ia.	Lat 41°15'58", long 92°38'33", in SE1/4 sec.25, T.75 N., R.16 W., Mahaska County, at bridge on State Highway 137, at south edge of Oskaloosa.	9.12	1966-	1983	a	(+)
05489350	South Avery Creek near Blakesburg, Ia.	Lat 41°00'59", long 92°37'32", in SE1/4 sec.19, T.72 N., R.15 W., Wapello County, at bridge on U.S. Highway 34, 3.5 mi north of Blakesburg.	33.1	1965-	04-02-83	83.63	4,000
05489490	Bear Creek at Ottumwa, Ia.	Lat 41°00'43", long 92°27'54", in NW1/4 sec.27, T.72 N., R.14 W., Wapello County, at bridge on U.S. Highway 34, near west edge of Ottumwa.	22.9	1965-	12-05-82	88.87	2,600

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Fox River Basin							
05494100	South Fox Creek tributary near West Grove, Ia. (Disc.)	Lat 40°43'31", long 92°37'33", near S1/4 corner sec.31, T.69 N., R.15 W., Davis County, at culvert on State Highway 2, 3.5 mi west of West Grove.	0.55	1953-	04-02-83	8.80	445
05494110	South Fox Creek near West Grove, Ia.	Lat 40°43'31", long 92°36'16", in SE1/4 sec.32, T.69 N., R.15 W., Davis County, at bridge on State Highway 2, 2.4 mi west of West Grove.	12.2	1965-	12-05-82	83.10	(+)
Big Sioux River Basin							
06483410	Otter Creek north of Sibley, Ia.	Lat 43°27'41", long 95°44'29", at NE corner sec.25, T.100 N., R.42 W., Osceola County, at bridge on county highway L40, 4 mi north of Sibley.	11.9	1952-	06-20-83	6.92	170
06483430	Otter Creek at Sibley, Ia.	Lat 43°24'14", long 95°46'10", near N1/4 corner sec.14, T.99 N., R.42 W., Osceola County, at bridge on county highway A22, 1 mi northwest of Sibley.	29.9	1952-	06-20-83	8.52	1,150
06483440	Dawson Creek near Sibley, Ia.	Lat 43°23'23", long 95°42'53", near NW corner sec.20, T.99 N., R.41 W., Osceola County, at culvert on county highway A30, 2 mi southeast of Sibley.	4.35	1952-	06-20-83	6.34	(+)
06483460	Otter Creek near Ashton, Ia.	Lat 43°20'07", long 95°45'43", in SE1/4 sec.2, T.98 N., R.42 W., Osceola County, at bridge on county highway L36, 2 mi northeast of Ashton.	88.0	1952-	06-20-83	10.92	4,500
06483495	Burr Oak Creek near Perkins, Ia.	Lat 43°14'43", long 96°10'38", in SE1/4 sec.5, T.97 N., R.45 W., Sioux County, at bridge on U.S. Highway 75, 4 mi north of Perkins.	30.9	1966-	06-02-66 06-07-67 1968 04-05-69 03-03-70 06-06-71 06-07-72 06-18-73 06-22-74 06-04-75 05-22-76 08-16-77 07-22-78 05-11-79 10-31-79 06-14-81 02-23-82 06-20-83	85.75 85.99 a 86.26 86.30 86.66 87.19 86.98 83.57 85.55 85.02 83.01 82.92 84.67 85.22 85.30 85.29 88.37	760 880 <90 1,020 1,040 1,220 1,700 1,500 170 c670 c500 c110 c100 c380 c560 c590 c590 2,800
Perry Creek Basin							
06599800	Perry Creek near Merrill, Ia.	Lat 42°43'16", long 96°20'33", in NW1/4 sec.12, T.91 N., R.47 W., Plymouth County, at bridge on county highway C44, 5 mi west of Merrill.	8.17	1953-	06-20-83	9.62	(+)
06599950	Perry Creek near Hinton, Ia.	Lat 42°37'67", long 96°22'13", in NE1/4 sec.15, T.90 N., R.47 W., Plymouth County, at bridge on county highway, 4 mi west of Hinton.	30.8	1953-	06-20-83	32.61	(+)
Floyd River Basin							
06600030	Little Floyd River near Sanborn, Ia.	Lat 43°11'10", long 95°43'30", in NE1/4 sec.31, T.97 N., R.41 W., O'Brien County, at bridge on U.S. Highway 18, 3.5 mi west of Sanborn.	8.44	1966-	06-20-83	88.28	(+)
Monona-Harrison Ditch Basin							
06601480	Big Whiskey Slough near Remsen, Ia.	Lat 42°48'28", long 95°53'21", in NW1/4 sec.11, T.92 N., R.43 W., Plymouth County, at bridge on State Highway 3, 4.2 mi east of Remsen.	12.9	1966-	06-20-83	93.11	(+)
06602190	Elliott Creek at Lawton, Ia.	Lat 42°28'30", long 96°11'22", in NW1/4 sec.3, T.88 N., R.46 W., Woodbury County, at bridge on U.S. Highway 20, at west edge of Lawton.	34.8	1966-	06-20-83	79.13	(+)
06602240	Big Whiskey Creek near Lawton, Ia. (Disc.)	Lat 42°28'30", long 96°15'01", in NW1/4 sec.6, T.88 N., R.46 W., Woodbury County, at bridge on U.S. Highway 20, 3.5 mi west of Lawton.	51.3	1966-83	1983	a	(+)

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date:	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Little Sioux River Basin							
06604510	Ocheyedan River near Ocheyedan, Ia.	Lat 43°25'58", long 95°36'41", in NE1/4 sec.6, T.99 N., R.40 W., Osceola County, at bridge on State Highway 9, 4 mi northwest of Ocheyedan.	73.5	1966-	06-20-83	82.94	(+)
06605340	Prairie Creek near Spencer, Ia.	Lat 43°05'16", long 95°09'40", in SE1/4 sec.36, T.96 N., R.37 W., Clay County, at bridge on U.S. Highway 71, 4 mi south of Spencer.	22.3	1966-	06-20-83	90.66	940
06605750	Willow Creek near Cornell, Ia.	Lat 42°58'21", long 95°09'40", in SE1/4 sec.12, T.94 N., R.37 W., Clay County, at bridge on U.S. Highway 71, 2 mi northwest of Cornell.	78.6	1966-	06-20-83	90.87	2,700
06605890	Waterman Creek at Hartley, Ia.	Lat 43°11'06", long 95°30'43", in NE1/4 sec.36, T.97 N., R.40 W., O'Brien County, at bridge on U.S. Highway 18, 1.8 mi west of Hartley.	28.7	1966-	06-20-83	87.65	1,700
06606790	Maple Creek near Alta, Ia.	Lat 42°44'56", long 95°22'16", in NE1/4 sec.31, T.92 N., R.38 W., Buena Vista County, at bridge on State Highway 3, 6 mi northwest of Alta.	15.5	1966-	06-20-83	89.63	3,500
Soldier River Basin							
06608450	Jordan Creek at Moorhead, Ia.	Lat 41°54'59", long 95°51'33", in NW1/4 sec.16, T.82 N., R.43 W., Monona County, at bridge on State Highway 183, at southwest corner of Moorhead.	30.1	1966-	1983	a	(+)
Boyer River Basin							
06609560	Willow Creek near Soldier, Ia.	Lat 41°55'17", long 95°42'05", near S1/4 corner sec.11, T.82 N., R.42 W., Monona County, at bridge on State Highway 37, 6 mi southeast of Soldier.	29.1	1966-	03-06-83	73.27	(+)
Mosquito Creek Basin							
06610510	Moser Creek near Earling, Ia.	Lat 41°46'35", long 95°26'55", in NE1/4 sec.1, T.80 N., R.40 W., Shelby County, at bridge on State Highway 37, 1.5 mi west of Earling.	21.6	1966-	06-14-83	a	(+)
06610600	Mosquito Creek at Neola, Ia.	Lat 41°26'36", long 95°36'42", in NE1/4 sec.26, T.77 N., R.42 W., Pottawattamie County, at bridge on county highway, 0.5 mi south of Neola. Prior to 04-19-63, gage located 0.9 miles upstream D.A. 128 mi ² .	131	1952-	06-14-83	19.74	3,900
Nishnabotna River Basin							
06807418	Graybill Creek near Carson, Ia.	Lat 41°13'57", long 95°22'51", in NW1/4 sec.7, T.74 N., R.39 W., Pottawattamie County, at bridge on State Highway 92, 2 mi east of Carson.	45.9	1966-	1983	a	(+)
06807470	Indian Creek near Emerson, Ia.	Lat 41°01'50", long 95°22'51", in NW1/4 sec.19, T.72 N., R.39 W., Montgomery County, at bridge on U.S. Highway 34, 1 mi east of Emerson.	37.3	1966-	06-25-66 06-10-67 1968 1969 1978 1981 1983	87.12 90.20 a a a a a	630 3,200 <500 <500 <500 <500 <910
06807720	Middle Silver Creek near Avoca, Ia.	Lat 41°28'33", long 95°28'06", near N1/4 corner sec.17, T.77 N., R.40 W., Pottawattamie County, at bridge on State Highway 83, 7 mi west of Avoca.	3.21	1955-	06-14-83	6.30	170

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Nishnabotna River Basin--Continued							
06807760	Middle Silver Creek near Oakland, Ia.	Lat 41°19'28", long 95°33'19", near E1/4 corner sec. 4, T.75., R.41 W., Pottawattamie County, at bridge on county highway, 8.5 mi northwest of Oakland.	25.7	1953-	06-14-83	9.56	1,020
06807780	Middle Silver Creek at Treynor, Ia.	Lat 41°14'37", long 95°36'53", near NE corner sec. 1, T.74 N., R.42 W., Pottawattamie County, at bridge on county highway L55, 1 mi north of Treynor.	42.7	1953-	06-14-83	6.40	1,160
06808880	Bluegrass Creek at Audubon, Ia.	Lat 41°42'46", long 94°55'43", in NW1/4 sec.28, T.80 N., R.35 W., Audubon County, at bridge on U.S. Highway 71, near south edge of Audubon.	15.4	1966-	1983	a	(+)
Tarkio River Basin							
06811760	Tarkio River near Elliot, Ia.	Lat 41°06'06", long 95°06'09", near NE corner sec.28, T.73 N., R.37 W., Montgomery County, at bridge on county highway, 4.5 mi southeast of Elliot.	10.7	1952-	06-28-83	6.23	280
06811800	East Tarkio Creek near Stanton, Ia.	Lat 41°04'48", long 95°05'34", in W1/2 sec. 34, T.73 N., R.37 W., Montgomery County, at bridge on county highway H24, 7 mi north of Stanton.	4.66	1952-	1983	a	<359
06811820	Tarkio River tributary near Stanton, Ia.	Lat 41°02'38", long 95°05'55", near NE corner sec.16, T.72 N., R.37 W., Montgomery County, at box culvert on county highway H63, 4 mi north of Stanton.	0.67	1952-	06-28-83	2.25	340
06811875	Snake Creek near Yorktown, Ia.	Lat 40°44'33", long 95°07'46", in NW1/4 sec.32, T.69 N., R.37 W., Page County, at bridge on State Highway 2, 1.5 mi northeast of Yorktown.	9.10	1966-	06-28-83	91.88	960
Nodaway River Basin							
06816290	West Nodaway River at Massena, Ia.	Lat 41°14'44", long 94°45'27", in E1/2 sec.33, T.75 N., R.34 W., Cass County, at bridge on State Highway 148, at southeast corner of Massena.	23.4	1966-	1983	a	(+)
Platte River Basin							
06818598	Platte River near Stringtown, Ia.	Lat 40°58'44", long 94°29'39", in SE1/4 sec.2, T.71 N., R.32 W., Adams County, at bridge on U.S. Highway 34, 3.8 mi east of Stringtown.	51.7	1966-	1968 1970 05-23-71 c09-12-72 c04-16-73 05-18-83	a a 91.59 c91.91 c90.58 90.70	<530 <530 2,500 c3,300 c1,240 1,180
06819110	Middle Branch 102 River near Gravity, Ia.	Lat 40°49'40", long 94°44'18", in SE1/4 sec.27, T.70 N., R.34 W., Taylor County, at bridge on State Highway 148, 4.8 mi north of Gravity.	33.5	1966-	1983	a	(+)
Chariton River Basin							
06903980	Chariton River near Udell, Ia.	Lat 40°46'53", long 92°50'12", in NE1/4 sec.17, T.69 N., R.17 W., Appanoose County, at bridge on county highway, 5.0 mi west of Udell.	631	1972-	04-02-83	854.89	3,350
06903990	Cooper Creek at Centerville, Ia.	Lat 40°45'02", long 92°51'36", in NW1/4 sec.30, T.69 N., R.17 W., Appanoose County, at bridge on State Highway 5, at north edge of Centerville.	47.8	1966-	04-02-83	73.97	2,220
06904040	Chariton River at Coal City, Ia.	Lat 40°35'35", long 92°42'40", in NE1/4 sec.20, T.67 N., R.16 W., Appanoose County, at bridge on county highway, at Coal City.	816	1972-	1983	a	(+)

+ Discharge not determined.

a Peak stage did not reach bottom of gage.

b Ice affected.

c Revised

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
Upper Iowa River Basin						
Bear Creek	Upper Iowa River	NE1/4 sec.2, T.99 N., R.6 W., Allamakee County, at bridge on State Highway 76, 3.0 mi (4.8 km) south of Dorchester.	118	1941-82	10-19-82 05-17-83	66.4 128
Boyer River Basin						
Boyer River (06609400)	Missouri River	Lat 42°00'08", long 95°23'07", in NE1/4 sec. 16, T.83 N., R.39 W., Crawford County, at bridge on county road, 2.0 mi (3.2 km) southwest of Denison.	517	1957-82	10-06-82 09-27-83	361 152

GROUND-WATER LEVELS

BUENA VISTA COUNTY

423646N095020101. Local number, 90-36-13 ADDA1.

LOCATION.--Lat 42°36'46", long 95°02'01", Hydrologic Unit 07100006, north of the Illinois Central Gulf Railroad tracks, approximately 1 mi west and .5 mi north of the Town of Newell.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Limestone of Mississippian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 338 ft, cased to 338 ft, perforated 323 to 338 ft.

DATUM.--Altitude of land-surface datum is 1,281 ft. Measuring point; Top of casing 3.30 ft above land-surface datum.

REMARKS.--Well D-26. 8.5 ft of casing perforated in Pleistocene glacial drift. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--May 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 99.90 ft below land-surface datum, Mar. 10, 1980; lowest 101.82 ft below land-surface datum, Aug. 5, 1980.

May 10, 1979	100.60	June 10, 1979	100.60	Aug. 30, 1979	101.10		
Dec. 11, 1979	101.20	Mar. 5, 1980	100.85	May 5, 1980	100.84	Aug. 5, 1980	101.82
Jan. 7, 1980	101.00	Mar. 10	99.90	June 2	101.06	Sept. 4	101.44
Feb. 7	101.18	Apr. 8	100.33	July 8	101.40		
Dec. 16, 1980	101.20	Sept. 11, 1981	101.53				
May 5, 1982	100.51	Aug. 23, 1982	101.10				
Nov. 19, 1982	100.28	Feb. 1, 1983	100.00	Apr. 28, 1983	100.72	Aug. 29, 1983	100.80

423618N095194511. Local number, 90-38-16 DDDD11.

LOCATION.--Lat 42°36'18", long 95°19'45", Hydrologic Unit 10230005, north of County Highway C-65, 2 mi east of the Village of Hanover.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 497 ft, cased to 497 ft, perforated 346.5 to 349.5 ft.

DATUM.--Altitude of land-surface datum is 1,365 ft. Measuring point; Top of casing 3.50 ft above land-surface datum.

REMARKS.--Well D-25. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--April 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 188.25 ft below land-surface datum, Jun. 2, 1980; lowest 189.20 ft below land-surface datum, Aug. 23, 1982.

Apr. 8, 1980	188.30	June 2, 1980	188.25	Aug. 4, 1980	188.38	Sept. 4, 1980	188.46
May 5	188.27	July 8	188.31				
Dec. 16, 1980	188.85	Sept. 11, 1981	189.06				
May 5, 1982	188.66	Aug. 23, 1982	189.20				
Nov. 18, 1982	189.12	Feb. 8, 1983	189.11	May 12, 1983	188.41	Aug. 4, 1983	188.78

424023N095571401. Local number, 91-35-26 BCCCC1.

LOCATION.--Lat 42°40'23", long 95°57'14", Hydrologic Unit 07100006, approximately 2.7 mi west and .5 mi north of the Village of Varina.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 357 ft, cased to 357 ft, perforated 338 to 347 ft.

DATUM.--Altitude of land-surface datum is 1,291 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.

REMARKS.--Well D-24. Paleozoic rock at 347 ft. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--December 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.40 ft below land-surface datum, Jan. 7, 1980; lowest 37.39 ft below land-surface datum, Aug. 29, 1983.

GROUND-WATER LEVELS

BUENA VISTA COUNTY

424023N095571401. Local number, 91-35-26 BCCC1.--Continued.

Dec. 11, 1979	19.50	Mar. 10, 1980	24.40	June 2, 1980	24.59	Sept. 4, 1980	25.42
Jan. 7, 1980	18.40	Apr. 11	23.67	July 8	24.95		
Mar. 5	24.70	May 5	24.08	Aug. 5	25.45		
Dec. 16, 1980	25.95	Sept. 11, 1981	25.39				
May 5, 1982	31.86	Aug. 23, 1982	32.95				
Nov. 19, 1982	34.02	Feb. 1, 1983	35.09	Apr. 28, 1983	35.98	Aug. 29, 1983	37.39

425233N094545001. Local number, 93-35-13 ADAA1.

LOCATION.--Lat 42°52'33", long 94°54'50", Hydrologic Unit 07100006, south of the Chicago, Rock Island and Pacific Railroad track, approximately 3.5 mi east and .75 mi north of the Town of Marathon.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1.50 in, depth 381 ft, cased to 381 ft, perforated 350 to 360 ft.

DATUM.--Altitude of land-surface datum is 1,330 ft. Measuring point; Top of casing 3.00 ft above land-surface datum.

REMARKS.--Well D-36. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--February 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 132.06 ft below land-surface datum, May 12, 1983; lowest 133.67 ft below land-surface datum, Sept. 11, 1981.

Feb. 6, 1980	133.15	Apr. 11, 1980	133.01	June 2, 1980	133.06	Aug. 4, 1980	133.58
Mar. 5	133.25	May 7	133.16	July 8	133.39	Sept. 10	133.47
Mar. 10	132.95						
Dec. 10, 1980	133.55	Sept. 11, 1981	133.67				
May 5, 1982	133.09	Aug. 2, 1982	133.40				
Nov. 19, 1982	132.96	Feb. 16, 1983	132.48	May 12, 1983	132.06	Aug. 3, 1983	132.53

CALHOUN COUNTY

422846N094375501. Local number, 89-32-33 CABC1.

LOCATION.--Lat 42°28'45", long 94°37'56", Hydrologic Unit 07100006, west edge of the picnic area on the east side of North Twin Lake, approximately 5 mi north of Rockwell City.

Owner: Iowa State Conservation Commission.

AQUIFER.--Glacial Drift of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in, depth 53 ft, lined with tile.

DATUM.--Altitude of land-surface datum is 1,222 ft. Measuring point; Hole in concrete platform 0.50 ft above land-surface datum.

REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements. 1948 to 1955 records published in Geological Survey Water-Supply Papers. Well 33F1. A public-supply well prior to 1978.

PERIOD OF RECORD.--October 1948 to June 1959, December 1961 to August 1966, July 1968 to November 1971, October 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.33 ft below land-surface datum, Apr. 30, 1952; lowest 32.12 ft below land-surface datum, Aug. 8, 1977.

GROUND-WATER LEVELS

CALHOUN COUNTY

422846N094375601. Local number, 89-32-33 CABCl.--Continued.

Nov. 16, 1955	19.37	Feb. 22, 1956	18.56	May 3, 1956	19.27	Aug. 30, 1956	23.19
Feb. 20, 1957	20.76	May 22, 1957	21.38	Aug. 29, 1957	22.60		
Dec. 5, 1957	20.77	Mar. 11, 1958	20.07	May 29, 1958	21.75	Aug. 18, 1958	23.62
Dec. 10, 1958	22.40	Mar. 4, 1959	20.66	June 16, 1959	24.31		
Dec. 7, 1961	18.24	May 23, 1962	14.89	Sept. 18, 1962	15.97		
Dec. 4, 1962	14.32	Apr. 4, 1963	13.62	May 23, 1963	10.17	Sept. 6, 1963	20.37
Dec. 12, 1963	19.50	Mar. 19, 1964	18.51	May 22, 1964	19.77		
Aug. 6, 1965	24.85						
Nov. 8, 1965	19.48	Feb. 23, 1966	16.32	June 7, 1966	16.22	Aug. 12, 1966	23.45
July 24, 1968	27.90						
Mar. 13, 1969	21.01	May 20, 1969	18.76	Sept. 12, 1969	20.99		
Nov. 19, 1969	18.03	Mar. 4, 1970	11.70				
Nov. 16, 1971	22.24						
Oct. 4, 1973	5.54						
Nov. 19, 1974	13.44	Feb. 19, 1975	12.88	Aug. 13, 1975	21.46		
Apr. 1, 1976	17.14	July 20, 1976	25.20				
Feb. 17, 1977	24.68	May 24, 1977	26.56	Aug. 8, 1977	32.12		
Feb. 21, 1978	24.20	May 17, 1978	23.72	Aug. 18, 1978	30.97		
Nov. 6, 1978	27.04	May 21, 1979	14.60	Aug. 27, 1979	26.70		
Nov. 27, 1979	26.40	Feb. 26, 1980	14.70	May 6, 1980	17.26	July 28, 1980	29.63
Dec. 2, 1980	29.59	Feb. 24, 1981	23.97	May 4, 1981	24.70	Aug. 11, 1981	31.84
Nov. 21, 1981	25.90	Feb. 25, 1982	24.19	June 2, 1982	19.19	Aug. 23, 1982	26.61
Nov. 1, 1982	22.31	Feb. 28, 1983	16.89	Apr. 28, 1983	5.51	Aug. 16, 1983	27.23

GROUND-WATER LEVELS

CARROLL COUNTY

420702N094404001. Local number, 84-33-3 BDAAl.
 LOCATION.--Lat 42°07'02", long 94°40'40", Hydrologic Unit 07100006, approximately .2 mi west of the Kendal Bridge, 2.3 mi east and 3.8 mi north of the Town of Glidden.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Sandstone of Pennsylvania Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 135 ft, cased to 135 ft, perforated 115 to 135 ft.
 DATUM.--Altitude of land-surface datum is 1,065 ft. Measuring point; casing at land-surface datum.
 REMARKS.--Well WC-130. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--November 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.45 ft above land-surface datum, Mar. 11, 1983; lowest 4.88 ft above land-surface datum, Jan. 5, 1983.

Nov. 5, 1982	+6.74	Mar. 11, 1983	+9.45	June 3, 1983	+7.88	Aug. 16, 1983	+5.80
Jan. 5, 1983	+4.88	May 4	+8.87	July 5	+8.96	Sept. 8	+5.60

420335N094521501. Local number, 84-35-25 BDAD1.
 LOCATION.--Lat 42°03'32", long 94°52'11", Hydrologic Unit 07100007, near the city water plant, Carroll.
 Owner: City of Carroll.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in, depth 120 ft, cased to 100 ft, open end.
 DATUM.--Altitude of land-surface datum is 1,275 ft. Measuring point; Top of casing 4.00 ft above land-surface datum.
 REMARKS.--City test No. 1. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--September 1939 to December 1949, May 1952 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.55 ft below land-surface datum, Sept. 8, 1945; lowest 85.50 ft below land-surface datum, Jul. 15, 1981.

Oct. 7, 1982	69.44	Feb. 17, 1983	68.39	July 8, 1983	65.46	Aug. 19, 1983	73.03
Oct. 18	67.47	Apr. 26	64.57	July 22	70.08	Aug. 30	67.82
Dec. 27	65.42	June 9	69.75				

421058N094582701. Local number, 85-35-7 CCCC1.
 LOCATION.--Lat 42°10'58", long 94°58'27", Hydrologic Unit 07100006, approximately 1 block north of Iowa Highway 217, next to the town maintenance building, Breda.
 Owner: Town of Breda.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled municipal artesian well, diameter 10 in, depth 340 ft, cased to 320 ft, screen 320 to 340 ft.
 DATUM.--Altitude of land-surface datum is 1,362 ft. Measuring point; Vent pipe 1.60 ft above land-surface datum.
 REMARKS.--Town well No. 3. Water levels affected by pumping. Original depth 349 ft. Water levels, in ft, below land-surface datum from steel tape or airline measurements. 1942 to 1955 records published in Geological Survey Water-Supply Papers.
 PERIOD OF RECORD.--March 1942 to August 1966, March 1968 to November 1971, June 1975 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 187.70 ft below land-surface datum, Mar. 25, 1948; lowest 250.40 ft below land-surface datum, May 24, 1977.

Feb. 21, 1956	222.58	May 2, 1956	190.45	Aug. 29, 1956	190.80		
Feb. 19, 1957	191.20	May 20, 1957	198.07	Aug. 26, 1957	192.13		
Dec. 3, 1957	191.98	Mar. 13, 1958	192.50	June 3, 1958	196.00	Aug. 20, 1958	192.67
Nov. 29, 1958	190.83	Mar. 19, 1959	204.30	June 3, 1959	195.30	Aug. 31, 1959	195.08
Nov. 26, 1959	192.24	Mar. 1, 1960	199.88	May 23, 1960	193.67		
Nov. 24, 1960	195.40	Aug. 15, 1961	204.40				

GROUND-WATER LEVELS

CARROLL COUNTY

421058N094582701. Local number, 85-35-7 CCCC1.--Continued.

Dec. 5, 1961	224.90	Apr. 9, 1962	220.40	Sept. 20, 1962	223.40		
May 21, 1963	216.40						
Dec. 10, 1963	208.40	Mar. 16, 1964	228.40	May 20, 1964	215.40	Aug. 19, 1964	202.40
Dec. 2, 1964	198.40	Mar. 16, 1965	228.40	June 8, 1965	227.40	Aug. 2, 1965	227.40
Nov. 12, 1965	227.40	Feb. 22, 1966	202.40	June 3, 1966	200.40	Aug. 11, 1966	195.40
Mar. 6, 1968	201.40						
Apr. 2, 1969	200.40	May 21, 1969	244.40				
Nov. 19, 1969	201.40						
Oct. 14, 1970	208.40						
Nov. 16, 1971	203.40						
June 19, 1975	197.20	Aug. 13, 1975	204.40				
Apr. 1, 1976	202.40						
Dec. 22, 1976	205.40	Feb. 17, 1977	207.40	May 24, 1977	250.40	Aug. 8, 1977	210.40
Nov. 18, 1977	204.40	Feb. 21, 1978	206.40	May 17, 1978	206.40	Aug. 18, 1978	209.40
Nov. 6, 1978	212.40	Feb. 20, 1979	210.40	May 21, 1979	205.40	Aug. 17, 1979	206.40
Feb. 28, 1980	206.40	July 30, 1980	206.40				
Feb. 19, 1981	204.40	May 4, 1981	210.40	Aug. 7, 1981	212.40		
Dec. 4, 1981	206.40	Jan. 28, 1982	242.40	May 25, 1982	200.98	Aug. 16, 1982	202.07
Nov. 1, 1982	199.96	Feb. 17, 1983	205.89	Apr. 27, 1983	202.42	Aug. 30, 1983	206.17

CERRO GORDO COUNTY

430456N093253601. Local number, 95-22-3 ABBA1.

LOCATION.--Lat 43° 04' 56", long 93° 25' 36", Hydrologic Unit 07080203, approximately 2.25 mi south of Dodge Point at Clear Lake.

Owner: Knut Olson.

AQUIFER.--Limestone of Devonian Age.

WELL CHARACTERISTICS.--Drilled domestic and stock artesian well, diameter 4 in, depth 134 ft.

DATUM.--Altitude of land-surface datum is 1,258 ft. Measuring point; Top of casing 1.40 ft above land-surface datum.

REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--October 1941 to August 1971, March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.34 ft below land-surface datum, Jul. 3, 1945; lowest 24.87 ft below land-surface datum, Feb. 14, 1979.

Nov. 29, 1982	24.03	Feb. 10, 1983	23.83	May 10, 1983	22.80	Aug. 2, 1983	24.04
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GROUND-WATER LEVELS
CERRO-GORDO COUNTY

430806N093164501. Local number, 96-21-13 BCCB1.
 LOCATION.--Lat 43°08'06", long 93°16'45", Hydrologic Unit 07080203, south of the County Home, just north of Iowa Highway 106, east of the City of Clear Lake.
 Owner: Mason City and Clear Lake Railroad.
 AQUIFER.--Dolomite in Cedar Valley Limestone of Devonian Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in, depth 198 ft.
 DATUM.--Altitude of land-surface datum is 1,165 ft. Measuring point; Top of well curb 1.30 ft above land-surface datum.
 REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--November 1940 to August 1971, March 1973 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.73 ft below land-surface datum, Jan. 28, 1951; lowest 17.26 ft below land-surface datum, Nov. 18, 1955.

Nov. 1, 1982	5.63	Feb. 10, 1983	4.19	May 24, 1983	4.16	Aug. 1, 1983	5.72
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430658N093281001. Local number, 96-22-20 CADC1.
 LOCATION.--Lat 43°06'58", long 93°28'10", Hydrologic Unit 07080203, east of County Road S-14 in Ventura Heights.
 Owner: W. Baine and H. Elder.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in, depth 126 ft.
 DATUM.--Altitude of land-surface datum is 1,249 ft. Measuring point; Hole in side of casing 0.87 ft above land-surface datum.
 REMARKS.--Casing information not available. Formerly Boy Scouts of America. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--July 1940 to August 1971, March 1973 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.65 ft below land-surface datum, Mar. 25, 1942; lowest 51.37 ft below land-surface datum, Aug. 4, 1977.

Nov. 29, 1982	42.76	Feb. 28, 1983	42.36	May 10, 1983	42.23	Aug. 2, 1983	47.70
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CHEROKEE COUNTY

423833N095365701. Local number, 90-40-6 BDCD1.
 LOCATION.--Lat 42°38'33", long 95°36'57", Hydrologic Unit 10230003, approximately 3.1 mi east of U.S. Highway 59 and .55 mi north of Iowa Highway 31 along the Illinois Central Railroad track.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1.25 in, depth 253 ft, cased to 252 ft, sandpoint 252 to 253 ft.
 DATUM.--Altitude of land-surface datum is 1,182 ft. Measuring point; Top of casing 4.00 ft above land-surface datum.
 REMARKS.--Well D-6. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--December 1978 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 28.38 ft below land-surface datum, Aug. 27, 1983; lowest 37.22 ft below land-surface datum, Sept. 10, 1981.

Dec. 12, 1978	36.60	Feb. 13, 1979	36.75	Apr. 2, 1979	33.70	Aug. 30, 1979	33.85
Jan. 5, 1979	36.80						
Oct. 29, 1979	33.90	Mar. 6, 1980	33.85	June 4, 1980	33.80	Sept. 4, 1980	34.94
Dec. 12, 1979	32.70	Mar. 31	33.60	July 9	33.99		
Feb. 5, 1980	33.75	May 5	33.26	Aug. 6	34.55		
Dec. 11, 1980	36.00	Sept. 10, 1981	37.22				
May 6, 1982	36.43	June 29, 1982	35.57				
Nov. 2, 1982	35.59	Feb. 8, 1983	34.31	May 4, 1983	29.83	Aug. 27, 1983	28.38

GROUND-WATER LEVELS

CHEROKEE COUNTY

424348N095231601. Local number, 91-39-1 ADAD1.

LOCATION.--Lat 42°43'48", long 95°23'16", Hydrologic Unit 10230005, approximately 2 mi east and .5 mi north of the Town of Aurelia at the Larson Lake County Park.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dolomite of Ordovician Age and Sandstone of Cambrian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in to 236 ft, 5 in to 486 ft, 2 in to 1,545 ft, depth 1,545 ft, cased to 1,126 ft, open end.

DATUM.--Altitude of land-surface datum is 1,370 ft. Measuring point; Top of casing 3.20 ft above land-surface datum.

REMARKS.--Well D-28. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--September 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 190.74 ft below land-surface datum, May 12, 1983; lowest 194.47 ft below land-surface datum, May 5, 1982.

Sept. 13, 1979	193.80				
Dec. 11, 1979	193.95	Apr. 8, 1980	193.30	June 4, 1980	193.63
Feb. 7, 1980	194.10	May 5	193.64	July 10	193.76
					Aug. 6, 1980
					Sept. 4
					193.79
					194.19
Dec. 16, 1980	194.25	Sept. 10, 1981	194.45		
May 5, 1982	194.47	Aug. 24, 1982	191.90		
Nov. 18, 1982	191.80	Feb. 17, 1983	191.80	May 12, 1983	190.74
				Aug. 4, 1983	191.02

424348N095231602. Local number, 91-39-1 ADAD2.

LOCATION.--Lat 42°43'48", long 95°23'16", Hydrologic Unit 10230005, approximately 2 mi east and .5 mi north of the Town of Aurelia at the Larson Lake County Park.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in to 340 ft, depth 340 ft, cased to 340 ft, perforated 235 to 240 ft.

DATUM.--Altitude of land-surface datum is 1,370 ft. Measuring point; Top of casing 3.30 ft above land-surface datum.

REMARKS.--Well D-29. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--September 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 191.10 ft below land-surface datum, Apr. 8, 1980; lowest 194.15 ft below land-surface datum, Aug. 24, 1982.

Sept. 13, 1979	191.70				
Dec. 11, 1979	191.50	Apr. 8, 1980	191.10	June 4, 1980	191.20
Feb. 7, 1980	191.89	May 5	191.13	July 10	191.20
					Aug. 6, 1980
					Sept. 4
					191.14
					191.47
Dec. 16, 1980	191.60	Sept. 10, 1981	191.71		
May 5, 1982	191.78	Aug. 24, 1982	194.15		
Nov. 18, 1982	194.05	Feb. 17, 1983	194.11	May 12, 1983	192.63
				Aug. 4, 1983	192.90

GROUND-WATER LEVELS

223

CHEROKEE COUNTY

424132N095480211. Local number, 91-42-16 DDDD11.
 LOCATION.--Lat 42°41'32", long 95°48'02", Hydrologic Unit 10230004, approximately 2 mi north of the Village of Fielding at the junction of County Roads L-36 and C-44.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 390 ft, cased to 390 ft, perforated 386 to 390 ft.
 DATUM.--Altitude of land-surface datum is 1,320 ft. Measuring point; Top of casing 1.50 ft above land-surface datum.
 REMARKS.--Well D-11. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--March 1980 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level 154.00 ft below land-surface datum, Apr. 8, 1980; lowest 155.50 ft below land-surface datum, Dec. 15, 1980.

Mar. 31, 1980	154.50	May 5, 1980	154.26	July 9, 1980	154.56	Sept. 4, 1980	155.17
Apr. 8	154.00	June 8	154.56	Aug. 6	154.93		
Dec. 15, 1980	155.50	Sept. 10, 1981	155.48				
May 6, 1982	165.24	June 29, 1982	155.34				
Nov. 2, 1982	154.90	Mar. 23, 1983	154.30	Sept. 7, 1983	154.06		

424802N095331201. Local number, 92-40-10 BDDD1.
 LOCATION.--Lat 42°48'02", long 95°33'12", Hydrologic Unit 10230003, along U.S. Highway 59, approximately 2.5 mi north of the City of Cherokee.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2.50 in, depth 300 ft, cased to 300 ft, perforated 114 to 118 ft.
 DATUM.--Altitude of land-surface datum is 1,210 ft. Measuring point; Top of casing at land-surface datum.
 REMARKS.--Well D-5. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--April 1980 to October 1980, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 26.81 ft below land-surface datum, May 4, 1983; lowest 29.19 ft below land-surface datum, May 5, 1982.

Apr. 7, 1980	28.00	June 4, 1980	28.48	Aug. 6, 1980	29.10	Sept. 4, 1980	29.06
May 7	28.34	July 8	28.72				
May 5, 1982	29.19	June 29, 1982	28.99				
Nov. 2, 1982	28.71	Feb. 8, 1983	27.98	May 4, 1983	26.81	July 27, 1983	26.99

CLAYTON COUNTY

424023N091291201. Local number, 91-5-30 BBBBB1.
 LOCATION.--Lat 42°40'23", long 91°29'12", Hydrologic Unit 07060006, northwest of the City of Edgewood, or 2 mi northwest of the junction of Iowa Highways 3 and 13.
 Owner: Harold Knight.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in, depth 36 ft.
 DATUM.--Altitude of land-surface datum is 1,233 ft. Measuring point; Hole in pump base at land-surface datum.
 REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--June 1957 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.10 ft below land-surface datum, Apr. 5, 1983; lowest 30.68 ft below land-surface datum, Jan. 12, 1959.

Oct. 6, 1982	20.60	Jan. 21, 1983	19.90	May 21, 1983	16.70	Aug. 20, 1983	19.30
Oct. 20	20.26	Feb. 1	20.10	June 5	18.30	Sept. 6	19.20
Nov. 7	20.40	Feb. 21	15.80	June 20	18.70	Sept. 20	16.02
Nov. 21	19.80	Mar. 5	19.00	June 22	18.80	Sept. 22	18.80
Dec. 6	16.10	Mar. 21	18.90	July 5	16.60		
Dec. 20	19.70	Apr. 5	15.10	July 21	18.40		
Jan. 6, 1983	19.50	May 5	16.40	Aug. 8	18.80		

GROUND-WATER LEVELS

CLAYTON COUNTY

424057N091320001. Local number, 91-6-22 ACAC1.

LOCATION.--Lat 42°40'57", long 91°32'00", Hydrologic Unit 07060006, southeast corner of the junction of Iowa Highways 3 and 13, Strawberry Point.

Owner: City of Strawberry Point.

AQUIFER.--Dolomite of Silurian Age and Dolomite of Upper Ordovician Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in, 0-130 ft, 12 in 130-161 ft depth 492 ft, cased to 161 ft with a 10 in liner 229-370 ft, open end.

DATUM.--Altitude of land-surface datum is 1,219 ft. Measuring point; Top of recorder platform 2.10 ft above land-surface datum.

REMARKS.--City well No. 2.

PERIOD OF RECORD.--March 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 114.38 ft below land-surface datum, May 9, 1973; lowest 133.18 ft below land-surface datum, Feb. 4, 1968.

Water level, in feet, at noon below land-surface datum, from recorder graph, water year October 1 to September 30 1982-1983

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	124.90	124.75	121.42	121.02	123.15	121.68	120.11	118.82	118.27	118.42	120.50	121.41
10	125.03	124.14	121.18	120.73	123.36	121.54	119.30	119.03	118.92	117.95	120.36	122.05
15	125.11	123.03	121.25	121.91	123.39	121.29	118.87	118.73	119.21	118.92	120.73	122.11
20	125.52	121.77	121.49	122.46	123.61	120.84	118.53	118.45	119.57	118.82	121.36	122.38
25	125.49	122.23	121.68	122.62	122.83	121.10	118.35	118.16	120.26	119.18	121.51	122.46
Eom	125.05	121.83	121.51	122.92	122.27	120.56	118.78	117.80	119.73	119.71	121.96	122.58
WTR YEAR	1983	MAX	117.80	MAY 31, 1983		MIN	125.52	OCT 20, 1982				

430156N091182901. Local number, 95-4-22 BC8D1.

LOCATION.--Lat 43°01'56", long 91°18'29", Hydrologic Unit 07060001, approximately 2 mi north of the junction of U.S. Highway 18 and U.S. Highway 52-Iowa Highway 13, near Spook Cave.

Owner: Gerald Mielke.

AQUIFER.--Limestone of Middle Ordovician Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in, depth 49 ft.

DATUM.--Altitude of land-surface datum is 940 ft. Measuring point; Top of casing 1.00 ft above land-surface datum.

REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--October 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.77 ft below land-surface datum, Aug. 17, 1977; lowest 27.88 ft below land-surface datum, Mar. 4, 1968.

Oct. 4, 1957	23.45	Jan. 30, 1958	23.85	May 2, 1958	23.25	July 16, 1958	23.84
Nov. 25	23.43	Mar. 4	23.87	May 21	23.58	Aug. 12	24.32
Dec. 27	23.30	Mar. 31	24.01	June 11	23.75	Sept. 12	23.90
Oct. 10, 1958	24.10	Dec. 12, 1958	23.98	Apr. 1, 1959	21.41	July 16, 1959	22.45
Nov. 7	23.98	Jan. 12, 1959	24.20	May 26	23.66	Sept. 3	22.79
Dec. 9, 1959	23.00	June 15, 1960	23.01	Sept. 26, 1960	22.73		
Nov. 30, 1960	23.20	Mar. 2, 1961	23.69	May 22, 1961	23.19	Sept. 22, 1961	23.43
Dec. 18, 1961	23.26	May 21, 1962	21.55	July 20, 1962	23.27	Sept. 13, 1962	23.77
Mar. 20, 1962	23.12						
Dec. 13, 1962	23.65	Feb. 13, 1963	23.95	May 28, 1963	23.95	Sept. 4, 1963	24.60
Nov. 13, 1963	24.54	Feb. 3, 1964	24.38	May 25, 1964	23.05	Aug. 24, 1964	24.40
Nov. 18, 1964	24.40	Mar. 22, 1965	24.07	June 1, 1965	22.64		
Oct. 11, 1965	22.88	Feb. 8, 1966	22.64	May 6, 1966	23.23		
Oct. 14, 1966	24.12	Apr. 18, 1967	23.70	July 10, 1967	24.13		
Oct. 10, 1967	24.32	Mar. 4, 1968	27.88	June 28, 1968	21.27	Sept. 26, 1968	23.05

GROUND-WATER LEVELS

CLAYTON COUNTY

430156N091182901. Local number, 95-4-22 BCBD1.--Continued.

Jan. 13, 1969	24.16	Mar. 19, 1969	20.76	June 25, 1969	24.00		
Nov. 12, 1969	23.95	Mar. 2, 1970	24.16				
Oct. 12, 1970	24.00	Jan. 22, 1971	24.07				
Nov. 4, 1971	23.82	July 19, 1972	22.00				
Feb. 6, 1973	22.65	Sept. 13, 1973	23.64				
Feb. 4, 1974	23.49						
Oct. 8, 1974	23.59	Jan. 24, 1975	22.67	May 6, 1975	20.94	Aug. 5, 1975	23.47
May 18, 1976	22.99						
Oct. 28, 1976	24.46	Jan. 7, 1977	24.54	May 18, 1977	23.66	Aug. 17, 1977	19.77
Mar. 13, 1978	23.82	June 5, 1978	24.08	Aug. 1, 1978	22.73		
Nov. 7, 1978	23.68	June 15, 1979	22.65	Aug. 28, 1979	21.34		
Jan. 15, 1980	23.86	May 1, 1980	23.54	Aug. 12, 1980	23.77		
Nov. 4, 1980	23.57	Mar. 11, 1981	23.35	June 3, 1981	22.58	Aug. 26, 1981	22.46
Nov. 18, 1981	23.25	Feb. 25, 1982	23.35	May 12, 1982	21.34	July 28, 1982	23.28
Oct. 19, 1982	23.69	Apr. 5, 1983	19.98	June 22, 1983	23.14	Sept. 21, 1983	22.10
Jan. 11, 1983	22.59						

425940N091194701. Local number, 95-4-32 DDDD1.

LOCATION.--Lat 42°59'40", Long 91°19'47", Hydrologic Unit 07060004, 1 mi west of the junction of U.S. Highway 52 and Iowa Highway 13, or northeast of the City of Farmersburg.

Owner: Milton and Willis Meier.

AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.

WELL CHARACTERISTICS.--Drilled stock artesian well, diameter 6 in, depth 380 ft (reported).

DATUM.--Altitude of land-surface datum is 1,090 ft. Measuring point; Plug in pump base 1.00 ft above land-surface datum.

REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--October 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 79.48 ft below land-surface datum, Sept. 21, 1983; lowest 126.56 ft below land-surface datum, Jan. 13, 1969.

Oct. 19, 1982	89.15	Feb. 23, 1983	80.40	Sept. 21, 1983	79.48
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GROUND-WATER LEVELS

CRAWFORD COUNTY

421031N095225511. Local number, 85-39-16 ADDD11.

LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and .5 mi north of the Town of Schleswig.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Limestone of Mississippian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 561 ft, cased to 561 ft, perforated 543 to 561 ft.

DATUM.--Altitude of land-surface datum is 1,370 ft. Measuring point; Top of casing 3.14 ft above land-surface datum.

REMARKS.--Well WC-73. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--June 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 305.58 ft below land-surface datum, Feb. 8, 1983; lowest 307.56 ft below land-surface datum, Jun. 25, 1981.

June 10, 1981	306.82	June 25, 1981	307.56	July 28, 1981	306.87		
Nov. 3, 1981	306.94	Apr. 6, 1982	307.07	June 9, 1982	305.99	Aug. 5, 1982	305.90
Feb. 5, 1982	307.18	May 6	306.89	July 6	305.83	Sept. 8	306.17
Oct. 7, 1982	305.91	Feb. 8, 1983	305.58	May 4, 1983	306.52	Aug. 1, 1983	307.08
Nov. 1	305.83	Mar. 10	306.81	June 3	306.73	Sept. 7	306.92
Jan. 3, 1983	305.65	Apr. 12	306.22	July 5	306.66		

DES MOINES COUNTY

404844N091142701. Local number, 69-3-6 AABA1.

LOCATION.--Lat 40°48'44", long 91°14'27", Hydrologic Unit 07080104, at the Iowa Army Ammunition Plant, near the Town of Middleton.

Owner: Iowa Ordnance Plant.

AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in, depth 1209 ft, cased to 855 ft, open end.

DATUM.--Altitude of land-surface datum is 717 ft. Measuring point; Top of platform 1.61 ft above land-surface datum.

REMARKS.--Plant well No. 3. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--March 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 118.95 ft below land-surface datum, Nov. 2, 1982; lowest 201.75 ft below land-surface datum, Aug. 15, 1978.

Oct. 7, 1982	132.67	Feb. 12, 1983	121.09	May 12, 1983	122.99	July 17, 1983	123.29
Nov. 2	118.95	Mar. 5	123.39	June 20	123.16	Aug. 19	123.63
Jan. 8, 1983	122.79	Apr. 15	119.69				

404753N091142501. Local number, 69-3-6 DDCD1.

LOCATION.--Lat 40°47'53", long 91°14'25", Hydrologic Unit 07080104, at the Iowa Army Ammunition Plant, near the Town of Middleton.

Owner: Iowa Ordnance Plant.

AQUIFER.--Limestone of Devonian and Mississippian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 19 in, depth 675 ft, cased to 75 ft, open end.

DATUM.--Altitude of land-surface datum is 699 ft. Measuring point; Top of platform 1.91 ft above land-surface datum.

REMARKS.--Plant well No. 2. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--March 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 74.46 ft below land-surface datum, Apr. 18, 1975; lowest 83.19 ft below land-surface datum, Apr. 26, 1950.

Oct. 7, 1982	79.89	Feb. 12, 1983	79.54	May 12, 1983	79.89	July 17, 1983	79.93
Nov. 2	79.99	Apr. 14	79.99	June 20	79.88	Aug. 19	80.23
Jan. 8, 1983	80.29						

GROUND-WATER LEVELS

227

EMMET COUNTY

432927N094345501. Local number, 100-32-11 DDDD1.
 LOCATION.--Lat 43°29'27", long 94°34'55", Hydrologic Unit 07100003, at Okamanpedan Lake Reserve State Park, north of the Town of Dölliver.
 Owner: State of Iowa.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 6 in, depth 277 ft.
 DATUM.--Altitude of land-surface datum is 1,233 ft. Measuring point; Plug in pump base 0.61 ft above land-surface datum.
 REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--November 1939 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 59.60 ft below land-surface datum, Dec. 19, 1946; lowest 77.86 ft below land-surface datum, Aug. 27, 1979.

Nov. 17, 1982	69.17	Feb. 15, 1983	68.69	May 10, 1983	67.71	Aug. 2, 1983	73.21
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GREENE COUNTY

415449N094161501. Local number, 82-29-18 CAAA1.
 LOCATION.--Lat 41°54'49", long 94°16'15", Hydrologic Unit 07100006, approximately .6 mi south and 4 mi east of the Village of Cooper and just south of County Road E-57.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Sandstone of Pennsylvanian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 101 ft, cased to 100 ft, perforated 89 to 100 ft, open end.
 DATUM.--Altitude of land-surface datum is 960 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.
 REMARKS.--Well WC-116. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--September 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.41 ft above land-surface datum, Jul. 5, 1983; lowest 4.52 ft below land-surface datum, Nov. 5, 1982.

Sept. 2, 1982	4.37						
Oct. 8, 1982	4.48	Jan. 5, 1983	3.53	May 4, 1983	0.86	Aug. 1, 1983	1.91
Nov. 5	4.52	Feb. 9	3.44	June 3	1.56	Sept. 8	3.59
Dec. 9	4.15	Apr. 13	0.47	July 5	+0.41		

415449N094173201. Local number, 82-30-13 CABA1.
 LOCATION.--Lat 41°54'49", long 94°17'32", Hydrologic Unit 07100006, approximately .5 mi south and 3 mi east of the Village of Cooper and just south of County Road E-57.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Sandstone of Pennsylvanian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 230 ft, cased to 230 ft, perforated 209 to 230 ft.
 DATUM.--Altitude of land-surface datum is 1,035 ft. Measuring point; Top of casing 1.45 ft above land-surface datum.
 REMARKS.--Well WC-118. Water levels, in ft, below land-surface datum from steel tape or electric line measurements. Original depth 245 ft, casing plugged at 230 ft.
 PERIOD OF RECORD.--September 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 66.79 ft below land-surface datum, Jul. 5, 1983; lowest 71.48 ft below land-surface datum, Sep. 2, 1982.

Sept. 2, 1982	71.48						
Oct. 8, 1982	71.37	Jan. 5, 1983	70.86	Apr. 13, 1983	68.10	July 5, 1983	66.79
Nov. 2	71.42	Feb. 9	70.81	May 4	67.44	Aug. 1	69.31
Dec. 9	71.37	Mar. 11	68.46	June 3	69.10	Sept. 8	70.11

GRUNDY COUNTY

422605N092560001. Local number, 88-18-15 DBBB1.
 LOCATION.--Lat 42°26'05", long 92°56'00", Hydrologic Unit 07080205, west of the corner of Monroe and 4th Streets and west of the high school, Wellsburg.
 Owner: City of Wellsburg.
 AQUIFER.--Limestone and Dolomite of Upper Devonian Age.
 WELL CHARACTERISTICS.--Drilled public-emergency-supply artesian well, diameter 12 in, depth 280 ft, cased to 128 ft, open end.
 DATUM.--Altitude of land-surface datum is 1,060 ft. Measuring point; Edge of vent pipe 1.25 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--September 1960 to August 1971, May 1973 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.45 ft below land-surface datum, Feb. 22, 1983; lowest 96.81 ft below land-surface datum, Sep. 27, 1960.

Oct. 26, 1982	36.10	Feb. 22, 1983	34.45	May 17, 1983	34.79	Aug. 1, 1983	37.27
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GROUND-WATER LEVELS

HARRISON COUNTY

413838N095452001. Local number, 79-42-19 AADB1.

LOCATION.--Lat 41°38'38", long 95°46'20", Hydrologic Unit 10230007, approximately .5 mi east of the Town of Logan, near U.S. Highway 30.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dolomite of Mississippian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 628 ft, cased to 628 ft, perforated 588 to 628 ft.

DATUM.--Altitude of land-surface datum is 1,045. Measuring point; Top of casing 4.40 ft above land-surface datum.

REMARKS.--Well WC-22. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--November 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 13.42 ft below land-surface datum, Nov. 3, 1981; lowest 16.37 ft below land-surface datum, Jun. 3, 1982.

Nov. 3, 1981	13.42	Apr. 6, 1982	14.75	June 3, 1982	16.37	Aug. 3, 1982	16.20
Jan. 13, 1982	16.36	May 6	14.84	July 7	16.22	Sept. 9	16.08

Oct. 7, 1982	15.93	Jan. 3, 1983	15.72	Apr. 12, 1983	14.92	July 6, 1983	14.95
Nov. 1	15.87	Feb. 8	15.52	May 2	15.05	Aug. 2	14.83
Dec. 2	15.70	Mar. 10	15.69	June 2	14.80	Sept. 7	14.43

414955N096000601. Local number, 81-44-18 AADA1.

LOCATION.--Lat 41°49'55", long 96°00'06", Hydrologic Unit 10230003, approximately 1.8 mi northeast of the Town of Little Sioux, just west of Iowa Highway 301.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Sandstone of Pennsylvania Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 126 ft, cased to 126 ft, perforated 108 to 126 ft.

DATUM.--Altitude of land-surface datum is 1,075 ft. Measuring point; Top of casing 2.80 ft above land-surface datum.

REMARKS.--Well WC-23. Original depth 209 ft, casing plugged 126 ft. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--January 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 52.74 ft below land-surface datum, Jul. 6, 1983; lowest 64.07 ft below land-surface datum, Jan. 15, 1982.

Jan. 15, 1982	64.07	May 6, 1982	59.55	July 7, 1982	61.27	Sept. 9, 1982	62.19
Apr. 6	59.48	June 3	61.75	Aug. 4	61.34		

Oct. 7, 1982	61.33	Jan. 3, 1983	60.79	Apr. 12, 1983	57.52	July 6, 1983	52.74
Nov. 1	60.89	Feb. 8	61.21	May 2	54.42	Aug. 2	56.27
Dec. 2	60.67	Mar. 10	57.49	June 2	55.53	Sept. 7	61.41

HENRY COUNTY

405810N091330502. Local number, 71-6-9 ABAC2.

LOCATION.--Lat 40°58'10", long 91°33'05", Hydrologic Unit 07080107, in the city water plant on Adams Street, Mount Pleasant.

Owner: City of Mount Pleasant.

AQUIFER.--Jordan Sandstone of Late Cambrian Age.

WELL CHARACTERISTICS.--Drilled municipal artesian well, diameter 20 to 19 in, depth 1,860 ft, cased to 623 ft, open end.

DATUM.--Altitude of land-surface datum is 725 ft. Measuring point; Hole in pump base 2.25 ft above land-surface datum.

REMARKS.--City well No. 4. Water levels affected by pumping. Water levels, in ft, below land-surface datum from airline measurements.

PERIOD OF RECORD.--April 1946 to December 1950, January 1953 to November 1955, December 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 132.00 ft below land-surface datum, May 5, 1946; lowest nonpumping 198.75 ft below land-surface datum, Jan. 7, 1978.

Oct. 19, 1982	p209.75	Mar. 15, 1983	p237.26	May 11, 1983	p192.25	July 11, 1983	p193.75
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p Well being pumped.

410848N091394801. Local number, 73-7-9 AABD1.

LOCATION.--Lat 41°08'46", long 91°39'48", Hydrologic Unit 07080107, north of Main Street near the water tower, Wayland.

Owner: Town of Wayland.

AQUIFER.--Glacial Drift of Pleistocene Age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 52 ft.

DATUM.--Altitude of land-surface datum is 735 ft. Measuring point; Top of cement cover 0.21 ft above land-surface datum.

REMARKS.--Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurement.

PERIOD OF RECORD.--September 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.30 ft below land-surface datum, Sep. 1, 1965; lowest 14.69 ft below land-surface datum, Feb. 2, 1977.

Oct. 18, 1982	9.60	Mar. 15, 1983	8.66	May 11, 1983	9.41	July 11, 1983	9.83
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GROUND-WATER LEVELS

IDA COUNTY

42215N095390811. Local number, 87-41-5 CCCC11.
 LOCATION.--Lat 42°22'15", long 95°39'08", Hydrologic Unit 10230005, approximately .75 mi east and 6.5 mi south of the Village of Cushing.

Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 490 ft, cased to 490 ft, perforated 301 to 305 ft.
 DATUM.--Altitude of land-surface datum is 1,344 ft. Measuring point; Top of casing 3.00 ft above land-surface datum.

REMARKS.--Well D-10. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--June 1980 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 202.55 ft below land-surface datum, Jun. 4, 1980; lowest 206.50 ft below land-surface datum, May 7, 1982.

June 4, 1980	202.55	July 9, 1980	204.90	Aug. 7, 1980	205.69	Sept. 9, 1980	205.55
Dec. 11, 1980	205.10	Sept. 11, 1981	205.75				
May 7, 1982	206.50	June 29, 1982	206.37				
Nov. 2, 1982	205.75	May 4, 1983	203.95	July 27, 1983	203.64		

423107N095383201. Local number, 89-41-13 CCCC1.
 LOCATION.--Lat 42°31'07", long 95°38'32", Hydrologic Unit 10230003, at a roadside park on County Road D-15, approximately 1.5 mi east and 3.5 mi north of the Village of Cushing.

Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Limestone of Mississippian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 469 ft, cased to 468 ft, perforated 465 to 468 ft, open end.
 DATUM.--Altitude of land-surface datum is 1,320 ft. Measuring point; Top of casing 1.50 ft above land-surface datum.

REMARKS.--Well D-9. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--December 1978 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 186.45 ft below land-surface datum, Jul. 27, 1983; lowest 207.14 ft below land-surface datum, Apr. 8, 1980.

Dec. 12, 1978	190.80	Feb. 13, 1979	191.15	Apr. 2, 1979	191.10	Aug. 30, 1979	189.85
Jan. 5, 1979	191.00						
Oct. 29, 1979	189.55	Feb. 5, 1980	188.30	Mar. 6, 1980	198.00	Apr. 8, 1980	207.14
Dec. 12	189.60						
Dec. 11, 1980	192.10	Sept. 11, 1981	192.44				
May 6, 1982	192.09	June 29, 1982	191.68				
Nov. 2, 1982	191.14	Feb. 8, 1983	190.46	May 4, 1983	186.43	July 27, 1983	186.45

GROUND-WATER LEVELS

JACKSON COUNTY

420842N090165701. Local number, 85-6E-29 ACAD1.
 LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge.
 Owner: U.S. Geological Survey.
 AQUIFER.--Mt. Simon Sandstone of Early Cambrian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in depth 1,804 ft, cased to 1,725 ft, screened 1,705 to 1,725 ft, open end.
 DATUM.--Altitude of land-surface datum is 610 ft. Measuring point; Mark on angle iron attached to well house 6.05 ft above land-surface datum.
 REMARKS.--Water levels, in ft, above land-surface datum from engineers rule measurements.
 PERIOD OF RECORD.--May 1983 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.35 ft above land-surface datum, May 19, 1983; lowest 7.74 ft above land-surface datum, Aug. 31, 1983.

May 19, 1983	+8.35	July 28, 1983	+8.03	Aug. 31, 1983	+7.74	Sept. 28, 1983	+7.77
June 29	+8.03						

420842N090165702. Local number, 85-6E-29 ACAD2.
 LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge.
 Owner: U.S. Geological Survey.
 AQUIFER.--Ironton-Galesville Sandstone of Middle Cambrian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 1,275 ft, cased to 1,224.4 ft, screened 1,204.4 to 1,224.4 ft, open end.
 DATUM.--Altitude of land-surface datum is 610 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--July 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.80 ft below land-surface datum, Apr. 22, 1983; lowest 3.88 ft below land-surface datum, Nov. 4, 1982.

July 22, 1982	3.07						
Oct. 12, 1982	3.61	Nov. 4, 1982	3.88	Dec. 7, 1982	3.65	Apr. 22, 1983	2.80

420842N090168703. Local number, 85-6E-29 ACAD3.
 LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge.
 Owner: U.S. Geological Survey.
 AQUIFER.--St. Peter Sandstone and Prairie du Chien Dolomite of Ordovician Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 910 ft, cased to 624.2 ft, screened 604.2 to 624.2 ft, open end.
 DATUM.--Altitude of land-surface datum is 610 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.55 ft below land-surface datum, May 20, 1982; lowest 9.90 ft below land-surface datum, Aug. 31, 1983.

May 20, 1982	7.55	June 21, 1982	8.19	July 22, 1982	8.56		
Oct. 12, 1982	9.04	Jan. 11, 1983	8.22	May 19, 1983	7.84	Aug. 31, 1983	9.90
Nov. 4	8.70	Feb. 28	8.16	June 29	8.79	Sept. 28	9.79
Dec. 7	8.68	Apr. 22	7.58	July 28	9.15		

420842N090165704. Local number, 85-6E-29 ACAD4.
 LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge.
 Owner: U.S. Geological Survey.
 AQUIFER.--Galena Dolomite of Ordovician Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 400 ft, cased to 319.8 ft, screened 299.6 to 319.6 ft, open end.
 DATUM.--Altitude of land-surface datum is 610 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.22 ft below land-surface datum, Apr. 22, 1983; lowest 17.01 ft below land-surface datum, Aug. 31, 1983.

May 20, 1982	13.30	June 21, 1982	15.46	July 22, 1982	16.42		
Oct. 12, 1982	16.96	Jan. 11, 1983	15.58	May 19, 1983	12.94	Aug. 31, 1983	17.01
Nov. 4	14.88	Feb. 28	15.04	June 29	15.46	Sept. 28	16.05
Dec. 7	14.50	Apr. 22	12.22	July 28	15.38		

GROUND-WATER LEVELS

JASPER COUNTY

414205N092592001. Local number, 80-18-31 A8881.
 LOCATION.--Lat 41°42'05", long 92°59'20", Hydrologic Unit 07080105, approximately 3 mi east of the City of Newton on U.S. Highway 6.
 Owner: P.W. Beukema.

AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Dug stock water-table well, diameter 36 in, depth 37 ft, cribbed with brick.
 DATUM.--Altitude of land-surface datum is 940 ft. Measuring point; Top of cement platform 0.70 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--February 1940 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.67 ft below land-surface datum, Jun. 10, 1947;
 lowest 27.15 ft below land-surface datum, Dec. 18, 1948.

Oct. 1, 1982	7.53	Mar. 24, 1983	4.72	June 16, 1983	5.22	Sept. 8, 1983	8.10
Dec. 29	4.30						

414147N093035401. Local number, 80-19-33 ACAC.
 LOCATION.--Lat 41°41'50", long 93°03'53", Hydrologic Unit 07080105, 231 West 10th Street, Newton.
 Owner: John Coppess.

AQUIFER.--Jordan Sandstone of Late Cambrian Age.
 WELL CHARACTERISTICS.--Drilled unused private artesian well, diameter 12 to 6 in, depth 2,567 ft, cased to 1,750 ft, open end.
 DATUM.--Altitude of land-surface datum is 915 ft. Measuring point; Plug in cement well cover 0.50 ft above land-surface datum.
 REMARKS.--461 ft of the Prairie du Chien Formation of Ordovician Age, 262 ft of the St. Lawrence Formation of Cambrian Age, and 94 ft of Franconia Sandstone of Cambrian Age open. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--September 1963 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 98.43 ft below land-surface datum, Jun. 14, 1966;
 lowest 266.10 ft below land-surface datum, Jan. 27, 1982.

Sept. 18, 1963	109.64						
Nov. 15, 1963	109.14	Feb. 21, 1964	108.70	June 18, 1964	105.95		
Nov. 13, 1964	105.36	June 24, 1965	114.69	Aug. 20, 1965	114.44		
Nov. 12, 1965	113.89	Feb. 21, 1966	105.17	June 14, 1966	98.43	Aug. 12, 1966	104.64
Nov. 18, 1966	188.08	Dec. 9, 1966	188.27	Apr. 25, 1967	190.29	Aug. 9, 1967	199.57
Dec. 19, 1967	194.15	Feb. 14, 1968	194.56	June 25, 1968	194.91	Aug. 15, 1968	194.60
Dec. 12, 1968	198.40	Apr. 2, 1969	197.24	June 2, 1969	197.20	July 28, 1969	197.49
Apr. 7, 1970	196.80	July 22, 1970	196.54				
Oct. 18, 1970	197.30	June 9, 1971	201.04				
Nov. 15, 1971	197.35	Feb. 15, 1972	196.90				
May 16, 1973	197.30						
July 11, 1974	198.25						
Nov. 20, 1974	199.37	Apr. 18, 1975	199.48	Sept. 9, 1975	200.73		
Apr. 2, 1976	204.16	June 23, 1976	205.28				
Nov. 4, 1976	207.82	Feb. 17, 1977	209.13	June 1, 1977	211.13	Sept. 7, 1977	213.04
Nov. 8, 1977	212.86	Mar. 14, 1978	214.16	Aug. 2, 1978	216.84		
Oct. 30, 1978	217.39	Apr. 5, 1979	218.29	Aug. 27, 1979	220.95		
Jan. 14, 1980	221.96	Apr. 29, 1980	224.12				
Nov. 3, 1980	228.37	Apr. 13, 1981	228.72	June 24, 1981	230.59	Aug. 31, 1981	235.68
Jan. 30, 1981	223.36						
Nov. 4, 1981	233.26	Jan. 27, 1982	266.10	Apr. 20, 1982	234.24	July 14, 1982	234.83
Oct. 1, 1982	236.61	Mar. 24, 1983	235.82	June 16, 1983	247.10	Sept. 8, 1983	238.03
Dec. 29	237.69						

GROUND-WATER LEVELS

JOHNSON COUNTY

414107N091322901. Local number, 79-6-4 AAAA1.

LOCATION.--Lat 41°41'07", long 91°32'29", Hydrologic Unit 07080209, at Forest View Trailer Court, northern edge of Iowa City.

Owner: Forest View Trailer Court.

AQUIFER.--Limestone of Silurian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in, depth 280 ft, cased to 96 ft, open end.

DATUM.--Altitude of land-surface datum is 735 ft. Measuring point; Top of casing 1.00 ft above land-surface datum.

REMARKS.--Water levels affected by wells in the area pumping in late spring, summer, and early fall.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 96.93 ft below land-surface datum, Mar. 23, 1979; lowest 146.01 ft below land-surface datum, Jul. 17, 1971.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	127.35	124.13	105.08	100.64	99.95	98.82	99.43	-----	121.41	125.48	129.10	128.95
10	127.65	120.15	104.52	99.88	99.59	e99.50	e99.10	-----	122.64	125.18	130.63	128.80
15	127.10	115.40	103.67	100.32	99.50	-----	e98.80	-----	123.54	125.73	129.80	128.75
20	126.76	111.43	103.07	99.87	99.23	-----	-----	-----	124.80	126.27	130.22	128.28
25	124.35	109.49	102.20	99.48	99.05	-----	-----	e119.00	127.08	127.19	129.62	127.28
Eom	123.60	106.72	101.34	99.82	99.00	99.10	-----	120.47	126.29	127.69	129.45	127.80
WTR YEAR	1983	MAX	e98.80	APR 15, 1983	MIN	130.63	AUG 10, 1983					

e Estimated.

413925N091324001. Local number, 79-6-9 DDBC1.

LOCATION.--Lat 41°39'34", long 91°32'42", Hydrologic Unit 07080209, at the Quadrangle Dormitory, University of Iowa, Iowa City.

Owner: University of Iowa.

AQUIFER.--Niagaran and Alexandrian Dolomite of Silurian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in, depth 430.5 ft, cased to 225 ft, open end.

DATUM.--Altitude of land-surface datum is 714 ft. Measuring point; Hole in well cap 1.50 ft above land-surface datum.

REMARKS.--Water levels affected by nearby wells pumping in late spring, summer and early fall.

Water levels from April 1975 to October 1977 from recorder graph, from January 1978 to current year from steel tape measurements, in ft, below land-surface datum.

PERIOD OF RECORD.--April 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 75.02 ft below land-surface datum, Mar. 15, 1979; lowest 165.35 ft below land-surface datum, Jul. 15, 1977.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1974-75

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5								116.43	147.69	-----	156.12	139.63
10							79.43	119.31	146.22	151.23	-----	137.27
15							79.10	120.52	145.65	150.60	147.31	136.21
20							100.33	121.30	151.65	152.50	151.35	135.09
25							109.28	145.63	151.60	153.58	158.02	134.83
Eom							115.76	148.1e	-----	157.58	-----	154.88
WTR YEAR	1975	MAX	79.10	APR 1975	MIN	158.02	AUG 25, 1978					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1975-76

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	134.13	134.01	90.61	-----	82.49	-----	79.77	111.35	132.35	154.53	159.91	158.61
10	134.08	119.53	88.88	-----	81.46	80.27	88.69	117.97	135.88	161.55	161.25	158.73
15	134.69	-----	88.34	83.80	-----	80.23	83.83	-----	-----	163.30	156.74	162.17
20	134.13	-----	-----	-----	81.31	79.42	83.23	-----	139.65	159.96	159.66	157.44
25	134.34	-----	-----	-----	80.97	79.67	82.49	-----	-----	157.05	162.43	158.54
Eom	133.83	92.84	-----	82.54	80.79	79.81	95.80	-----	-----	158.76	162.19	156.43
WTR YEAR	1976	MAX	79.42	MAR 20, 1976	MIN	163.30	JUL 15, 1976					

Water level, in feet, at noon, below land-surface datum, from recorder graph water year October 1 to September 30 1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	155.85	125.73	92.42	-----	-----	81.83	80.13	-----	157.83	162.30	161.27	139.65
10	148.46	117.28	-----	-----	82.75	81.31	80.17	128.38	157.05	160.40	160.30	-----
15	153.59	112.83	-----	84.54	82.49	81.19	101.11	133.30	157.55	165.03	156.08	151.17
20	-----	105.71	88.10	84.26	82.37	81.15	113.09	136.15	158.00	165.35	142.56	181.00
25	129.01	102.36	87.08	83.74	81.84	80.82	118.64	-----	157.25	163.05	140.56	151.43
Eom	123.40	97.65	-----	-----	81.96	80.67	124.06	189.95	160.05	-----	139.53	152.36
WTR YEAR	1977	MAX	80.13	APR 5, 1977	MIN	165.35	JUL 15, 1977					

GROUND-WATER LEVELS

JOHNSON COUNTY

413925N091324001. Local number, 79-6-9 DDBC1.--Continued.

Jan. 11, 1978	80.18	Apr. 11, 1978	78.79	June 15, 1978	148.26	Aug. 11, 1978	156.63
Feb. 14	78.18	May 12	125.62	July 14	153.26	Sept. 15	155.20
Mar. 14	77.33						
Oct. 12, 1978	148.36	Jan. 10, 1979	78.08	Apr. 12, 1979	78.17	July 12, 1979	144.70
Nov. 16	119.70	Feb. 15	75.11	May 10	126.73	Aug. 16	145.60
Dec. 12	84.22	Mar. 15	75.02	June 14	141.20	Sept. 13	128.29
Oct. 11, 1979	137.90	Jan. 10, 1980	84.16	Apr. 21, 1980	88.22	July 14, 1980	159.33
Nov. 15	106.08	Feb. 8	77.33	May 19	133.84	Aug. 11	155.92
Dec. 13	82.32	Mar. 10	83.79	June 16	145.22	Sept. 8	155.82
Oct. 8, 1980	138.17	Jan. 30, 1981	78.80	Apr. 15, 1981	84.41	July 20, 1981	153.16
Nov. 11	121.96	Feb. 26	77.58	Apr. 30	134.77	Aug. 20	150.76
Dec. 10	85.96	Mar. 25	78.59	June 25	150.46	Sept. 23	136.97
Oct. 21, 1981	133.36	Jan. 21, 1982	79.63	Apr. 20, 1982	104.36	July 28, 1982	150.80
Nov. 19	126.63	Feb. 19	90.70	May 19	142.54	Aug. 30	154.70
Dec. 21	96.18	Mar. 18	90.94	June 24	147.59	Sept. 28	150.96
Oct. 26, 1982	135.48	Jan. 27, 1983	82.52	Apr. 28, 1983	94.80	July 27, 1983	146.01
Nov. 29	98.19	Feb. 28	84.81	May 26	133.99	Aug. 29	152.37
Dec. 27	80.79	Mar. 28	82.70	June 28	147.38	Sept. 29	144.33

413955N091320303. Local number, 79-6-10 BDBC3.

LOCATION.--Lat 41°39'58", long 91°32'06", Hydrologic Unit 07080209, at the Currier Hall Dormitory, University of Iowa, Iowa City.

Owner: University of Iowa.

AQUIFER.--Niagaran and Alexandrian Dolomite of Silurian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in, depth 425 ft, cased to 160 ft, open end.

DATUM.--Altitude of land-surface datum is 707 ft. Measuring point; Nipple welded to plate on top of casing 7.94 ft below land-surface datum.

REMARKS.--Water levels affected by nearby wells pumping in late spring, summer, and early fall. Thirty-five ft of Devonian open. Water levels, in ft, from steel tape measurements, below land-surface datum.

PERIOD OF RECORD.--October 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 62.12 ft below land-surface datum, Apr. 23, 1973; lowest 163.16 ft below land-surface datum, Jul. 14, 1978.

Oct. 19, 1971	155.87	Jan. 6, 1972	66.17	Apr. 20, 1972	112.48	July 27, 1972	152.93
Nov. 24	147.30	Mar. 8	64.83	May 17	125.15	Aug. 29	139.05
Dec. 17	75.24	Mar. 23	65.98	June 22	149.35	Sept. 26	138.89
Oct. 27, 1972	132.00	Apr. 23, 1973	62.12	May 10, 1973	117.29	Sept. 12, 1973	146.74
Nov. 21	82.57						
Oct. 17, 1973	142.79	Nov. 9, 1973	144.32	Mar. 27, 1974	62.90	July 1, 1974	141.10
Oct. 3, 1974	133.13	Apr. 9, 1975	63.60	June 21, 1975	136.33	Sept. 11, 1975	145.38
Mar. 5, 1975	64.90						
Oct. 14, 1975	147.32	Mar. 2, 1976	65.14	Sept. 30, 1976	161.91		
Oct. 6, 1976	157.77	Jan. 5, 1977	76.95	Apr. 8, 1977	72.61	July 15, 1977	160.77
Nov. 5	100.93	Feb. 9	74.48	May 5	141.34	Aug. 19	161.34
Dec. 3	82.28	Mar. 3	73.24	June 10	157.80	Sept. 16	160.78
Oct. 7, 1977	158.19	Jan. 11, 1978	71.29	Apr. 11, 1978	69.60	July 14, 1978	163.16
Oct. 25	151.64	Feb. 14	69.84	May 12	133.88	Aug. 11	158.00
Nov. 8	150.61*	Mar. 14	69.15	June 15	150.19	Sept. 15	158.78
Oct. 12, 1978	154.85	Jan. 18, 1979	68.10	Apr. 19, 1979	121.70	July 12, 1979	148.92
Nov. 16	99.82*	Feb. 15	66.38	May 10	133.86	Aug. 16	151.53
Dec. 18	72.15*	Mar. 15	66.15	June 14	145.70	Sept. 13	146.53

*Electric line measurement

*Electric line measurement

GROUND-WATER LEVELS

JOHNSON COUNTY

413985N091320303. Local number, 79-6-10 BDBC3.--Continued.

Oct. 11, 1979	148.11	Jan. 24, 1980	68.52	Apr. 21, 1980	69.70	July 28, 1980	158.85
Nov. 15	93.27	Feb. 22	67.03	May 19	142.03	Aug. 25	159.41
Dec. 13	71.86	Mar. 21	69.48	July 2	154.46	Sept. 23	159.70
Oct. 20, 1980	151.51	Jan. 30, 1981	69.63	Apr. 15, 1981	103.66	July 20, 1981	154.73
Nov. 26	82.19	Feb. 26	66.79	June 1	148.86	Aug. 20	156.67
Dec. 10	74.78	Mar. 25	69.14	June 25	153.16	Sept. 23	155.33
Oct. 21, 1981	151.40	Jan. 21, 1982	69.70	Apr. 20, 1982	97.42	July 20, 1982	154.03
Nov. 19	135.59	Feb. 19	71.31	May 19	145.04	Aug. 30	157.51
Dec. 21	74.87	Mar. 18	70.69	June 24	153.51	Sept. 28	156.41
Oct. 26, 1982	136.06	Jan. 27, 1983	68.15	Apr. 28, 1983	115.84	July 27, 1983	155.28
Nov. 29	78.86	Feb. 28	68.58	May 26	143.45	Sept. 29	157.61
Dec. 27	70.38	Mar. 28	68.43	June 28	152.04		

413844N091323201. Local number, 79-6-16 DDAD1.
 LOCATION.--Lat 41°38'44", long 91°32'32", Hydrologic Unit 07080209, 1223 South Riverside Drive, Iowa City.
 Owner: Iowa City Community School District.
 AQUIFER.--Limestone and Dolomite of Devonian Age and Dolomite of Silurian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in, depth 363 ft, cased to 66.5 ft, open end.
 DATUM.--Altitude of land-surface datum is 652 ft. Measuring point; Nipple welded to plate on top of casing 2.12 ft above land-surface datum.
 REMARKS.--U.S.G.S.- I.G.S. warehouse well. Water levels affected by wells in the area pumping in late spring, summer, and early fall. Water levels from April 1974 to October 1979 from recorder graph, from October 1979 to June 1980 from digital recorder, from June 1980 to March 1983 from recorder graph, from March of 1983 to current year from steel tape measurements, in ft, below land-surface datum.
 PERIOD OF RECORD.--April 1974 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.19 ft below land-surface datum, Mar. 5, 1979; lowest 32.18 ft below land-surface datum, Jul. 20, 1977.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1973-74

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5							10.73		19.46	22.48	24.48	----
10							-----		19.83	22.89	24.29	24.32
15							-----		20.68	23.81	24.50	24.46
20							-----	18.20	21.23	23.65	24.31	24.62
25							-----	18.58	21.54	23.82	24.30	23.70
Eom							-----	-----	22.13	24.59	24.31	23.25
WTR YEAR	1974		MAX 10.73	APR 5, 1974		MIN 24.62	SEP 20, 1974					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1974-75

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	21.49	14.95	11.80	-----	-----	10.89	15.39	21.82	24.38	-----	26.73
10	22.48	21.46	13.86	11.69	-----	-----	10.62	17.06	22.75	24.82	26.02	26.11
15	22.20	-----	-----	11.81	-----	-----	10.42	17.94	22.77	24.80	25.74	-----
20	-----	19.54	12.55	11.54	-----	11.14	10.96	18.14	23.31	24.96	25.53	25.67
25	22.22	17.88	12.34	11.40	-----	11.33	12.60	19.30	24.00	25.46	25.78	25.52
Eom	21.78	15.94	11.92	11.68	-----	10.72	14.13	20.98	24.19	25.88	26.56	24.92
WTR YEAR	1975		MAX 10.42	APR 15, 1975		MIN 26.73	SEP 5, 1975					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1975-76

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	24.75	24.81	-----	14.14	-----	12.76	11.86	13.09	23.18	27.76	29.92	31.30
10	24.67	24.34	15.82	-----	13.01	12.26	11.96	15.40	23.61	28.69	30.17	31.45
15	-----	-----	15.51	13.54	13.13	12.28	12.36	17.25	-----	-----	30.39	31.64
20	-----	-----	15.09	13.90	-----	11.67	12.44	-----	25.30	29.88	-----	31.52
25	24.75	19.38	14.46	13.56	12.84	11.82	12.23	20.63	26.07	29.90	30.54	-----
Eom	-----	17.82	14.14	-----	12.87	11.86	12.04	-----	26.90	29.70	30.97	31.04
WTR YEAR	1976		MAX 11.67	MAR 20, 1976		MIN 31.64	SEP 15, 1976					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	30.76	24.95	-----	15.62	14.92	14.58	13.59	-----	30.41	31.36	-----	28.15
10	-----	-----	17.54	15.40	-----	-----	13.51	23.40	31.08	31.83	-----	28.39
15	30.26	-----	-----	-----	14.80	-----	13.95	24.75	-----	-----	31.63	-----
20	29.92	20.82	16.56	-----	14.66	14.28	16.05	-----	31.42	32.18	30.80	-----
25	28.20	-----	16.00	14.88	14.57	-----	18.35	27.18	31.53	31.16	30.05	-----
Eom	26.13	-----	15.91	14.99	14.60	14.01	20.97	29.13	31.43	31.23	28.74	28.54
WTR YEAR	1977		MAX 13.51	APR 10, 1977		MIN 32.18	JUL 20, 1977					

GROUND-WATER LEVELS

JOHNSON COUNTY

413844N091323201. Local number, 79-6-16 DDAD1.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1977-78

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	28.28	24.46	-----	-----	-----	-----	12.45	12.31	23.18	26.06	26.99	27.33
10	27.40	24.39	-----	-----	-----	12.62	-----	13.45	24.30	-----	-----	27.38
15	26.84	23.97	-----	-----	-----	-----	12.07	15.74	-----	26.16	26.66	27.40
20	26.30	22.80	-----	-----	-----	12.44	11.83	17.99	25.16	26.10	22.19	27.26
25	-----	-----	-----	-----	-----	-----	-----	19.90	25.75	25.73	-----	-----
Eom	24.26	-----	-----	-----	-----	11.90	12.20	21.70	25.64	26.43	27.53	26.59
WTR YEAR	1978	MAX	11.90	MAR 31, 1978	MIN	28.28	OCT 5, 1977					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1978-79

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	25.96	23.56	-----	-----	-----	10.19	10.27	14.02	20.48	-----	24.79	-----
10	25.56	-----	-----	-----	-----	11.12	10.46	-----	21.33	22.38	-----	22.72
15	25.62	23.49	-----	-----	-----	-----	10.56	16.77	-----	22.56	24.99	23.00
20	24.86	22.31	-----	-----	11.34	10.88	10.93	17.68	-----	24.11	24.70	-----
25	-----	-----	12.98	11.78	11.53	-----	-----	18.80	22.70	-----	24.11	23.12
Eom	24.21	-----	12.48	11.70	11.25	10.60	13.97	-----	22.65	24.39	23.48	23.38
WTR YEAR	1979	MAX	10.19	MAR 5, 1979	MIN	25.96	OCT 5, 1978					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	23.02	14.98	12.68	11.97	11.71	12.28	-----	-----	-----	29.05	28.57
10	23.92	21.88	14.51	-----	11.75	11.69	12.11	17.65	23.74	-----	-----	28.45
15	23.82	20.01	13.97	12.41	11.83	12.08	12.12	19.98	-----	-----	29.51	27.96
20	23.47	18.83	13.55	12.49	-----	12.08	12.15	21.17	25.38	27.86	28.54	27.72
25	23.59	-----	13.04	12.08	-----	12.32	12.15	22.17	-----	28.68	-----	27.80
Eom	23.17	15.12	12.74	12.50	11.92	12.26	13.66	22.55	25.93	29.00	28.45	-----
WTR YEAR	1980	MAX	11.69	MAR 10, 1980	MIN	29.51	AUG 15, 1980					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	-----	-----	13.60	-----	12.46	12.97	-----	-----	-----	27.08	27.35
10	-----	-----	-----	13.68	12.84	12.54	13.10	20.15	25.34	-----	26.99	-----
15	-----	-----	-----	13.85	-----	11.94	-----	21.39	-----	-----	26.85	27.53
20	-----	-----	-----	13.17	12.93	-----	-----	22.51	-----	-----	-----	27.35
25	25.46	-----	-----	12.73	-----	-----	14.91	23.07	-----	27.13	27.57	-----
Eom	23.17	15.12	12.74	12.50	11.92	12.26	13.66	22.55	25.93	29.00	28.45	-----
WTR YEAR	1981	MAX	11.94	MAR 15, 1981	MIN	27.57	AUG 25, 1981					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1981-82

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	23.62	19.13	-----	-----	-----	11.96	-----	24.51	25.11	26.36	26.83
10	-----	-----	17.78	-----	-----	-----	11.98	-----	24.60	26.05	26.19	26.76
15	-----	-----	16.68	-----	-----	-----	11.62	-----	24.57	26.19	26.65	26.89
20	-----	-----	-----	-----	-----	-----	-----	20.76	25.11	25.96	26.57	26.62
25	26.35	22.01	-----	-----	-----	-----	-----	22.11	-----	25.93	26.83	26.33
Eom	25.01	20.42	-----	-----	-----	12.01	-----	22.44	25.26	26.07	26.73	26.67
WTR YEAR	1982	MAX	11.62	APR 15, 1982	MIN	26.89	SEP 15, 1982					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	26.97	25.18	16.32	-----	-----	11.00	-----	-----	-----	-----	-----	-----
10	26.89	25.27	15.60	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	27.35	-----	14.72	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	26.84	21.30	13.82	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	-----	19.96	12.95	-----	-----	-----	-----	-----	-----	-----	-----	-----
Eom	25.23	17.87	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
WTR YEAR	1983	MAX	10.87	APR 28, 1983	MIN	27.73	AUG 29, 1983					

Mar. 28, 1983	11.30	May 26, 1983	18.96	July 27, 1983	25.15	Sept. 29, 1983	27.64
Apr. 28	10.87	June 28	24.35	Aug. 29	27.73		

GROUND-WATER LEVELS

JOHNSON COUNTY

414315N091252001. Local number, 80-5-22 CBCB1.
 LOCATION.--Lat 41°43'15", long 91°25'20", Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.50 mi northeast of the junction of Interstate 80 and Iowa Highway 1.
 Owner: Chicago, Rock Island and Pacific Railroad Co.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 1.25 in, depth 20 ft, cased to 18 ft, screened 18 to 20 ft.
 DATUM.--Altitude of land-surface datum is 753 ft. Measuring point; Top of casing 4.20 ft above land-surface datum.
 REMARKS.--At the site of the now destroyed Elmira depot. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--October 1941 to September 1956, January 1958 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.78 ft below land-surface datum, Sep. 20, 1977; lowest dry, Dec. 2-31, 1955 and Nov. 8 - Dec. 31, 1964.

Oct. 20, 1982	12.39	Jan. 19, 1983	9.74	Apr. 20, 1983	7.71	July 21, 1983	10.36
Nov. 22	10.78	Feb. 23	10.27	May 23	9.36	Aug. 22	12.77
Dec. 21	7.61	Mar. 22	9.77	June 22	10.32	Sept. 20	15.09

414315N091252002. Local number, 80-5-22 CBCB2.
 LOCATION.--Lat 41°43'15", long 91°25'20", Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.50 mi northeast of the junction of Interstate 80 and Iowa Highway 1.
 Owner: Chicago, Rock Island and Pacific Railroad Co.
 AQUIFER.--Limestone of Devonian Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in, depth 82 ft.
 DATUM.--Altitude of land-surface datum is 753 ft. Measuring point; Top of casing 2.50 ft above land-surface datum.
 REMARKS.--Casing information not available. At the site of the now destroyed Elmira depot. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--December 1941 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.15 ft below land-surface datum, Apr. 21, 1952; lowest 21.05 ft below land-surface datum, Sep. 26, 1957.

Oct. 20, 1982	16.39	Jan. 19, 1983	15.29	Apr. 20, 1983	13.88	July 21, 1983	15.65
Nov. 22	15.58	Feb. 23	13.88	May 23	14.17	Aug. 22	17.48
Dec. 21	14.58	Mar. 22	15.29	June 22	15.52	Sept. 20	18.05

414853N091425101. Local number, 81-7-19 BCBB1.
 LOCATION.--Lat 41°48'53", long 91°42'51", Hydrologic Unit 07080208, approximately .75 mi west and 2.25 mi south of the Town of Swisher.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dolomite of Silurian Age and Limestone of Devonian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in, depth 535 ft, cased to 130 ft, open end.
 DATUM.--Altitude of land-surface datum is 745 ft. Measuring point; Top of casing 3.50 ft above land-surface datum.
 REMARKS.--U.S.G.S.-I.G.S. Plum Creek well. Water levels from November 1976 to October 1981 from recorder graph, from October 1981 to October 1982 from steel tape measurements, in ft, below land-surface datum, and from April 1983 to current year from recorder graph.
 PERIOD OF RECORD.--November 1976 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 64.46 ft below land-surface datum, May 31, 1983; lowest 72.92 ft below land-surface datum, Sept. 5, 1981.

Water level, in ft, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5			68.32	-----	67.89	68.03	67.88	68.10	69.19	70.05	71.05	70.91
10			68.32	-----	67.78	-----	68.13	68.53	69.76	70.34	71.04	70.96
15			68.85	67.76	68.02	68.02	68.29	68.51	69.66	70.70	71.08	70.72
20		68.15	68.02	67.69	67.92	68.21	68.20	68.76	69.66	70.66	70.89	-----
25		67.76	-----	67.53	67.67	68.17	68.25	58.96	69.66	70.90	70.86	-----
Eom		68.19	-----	67.72	67.97	68.33	68.46	69.13	69.70	70.92	70.84	-----
WTR YEAR	1977	MAX	67.53	JAN 25, 1977	MIN	71.08	AUG 15, 1977					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1977-78

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	-----	68.29	-----	-----	67.92	68.10	67.86	67.78	-----	68.57	69.27
10	-----	-----	68.86	-----	-----	67.85	67.86	67.67	67.82	-----	68.52	69.29
15	-----	68.71	-----	68.08	-----	68.29	68.32	67.66	67.97	-----	68.36	69.61
20	-----	68.97	-----	-----	-----	67.97	67.86	67.82	68.12	68.38	69.14	59.56
25	-----	68.83	-----	-----	-----	68.22	-----	67.64	67.85	67.96	69.05	69.79
Eom	-----	68.46	-----	-----	-----	67.80	67.92	-----	68.07	68.10	69.24	69.51
WTR YEAR	1978	MAX	67.64	MAY 25, 1978	MIN	69.79	SEP 25, 1978					

GROUND-WATER LEVELS

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JOHNSON COUNTY

414853N091425101. Local number, 81-7-19 BCB81.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1978-79

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	-----	-----	-----	68.30	68.13	66.19	64.79	-----	67.00	67.98	68.00
10	-----	-----	-----	68.90	-----	68.35	65.68	64.75	65.97	66.98	68.11	68.10
15	-----	-----	-----	68.50	68.02	68.67	65.74	65.14	65.86	67.17	68.56	68.70
20	-----	-----	-----	67.95	67.96	-----	65.56	65.01	65.90	67.50	68.30	68.64
25	-----	-----	-----	68.25	68.32	66.83	65.04	65.36	66.51	67.60	68.32	68.94
Eom	-----	-----	-----	68.29	67.98	66.59	65.26	65.36	66.32	67.86	68.00	68.88
WTR YEAR	1979		MAX	64.75	MAY 10, 1979	MIN	68.94	SEP 25, 1979				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	68.82	68.78	68.16	68.49	67.88	-----	68.01	68.17	69.50	70.84	72.21	72.71
10	68.68	68.87	68.43	68.85	67.74	67.88	67.86	68.16	69.82	71.21	72.41	72.84
15	68.80	68.70	68.52	69.06	67.88	67.66	67.91	-----	69.96	71.42	72.45	72.45
20	68.40	68.95	68.63	69.42	67.57	67.74	68.03	68.95	70.23	71.71	72.26	72.12
25	68.90	68.58	68.52	68.87	68.03	68.03	68.10	69.09	70.26	71.96	72.57	72.51
Eom	68.36	68.66	68.52	69.41	68.23	67.83	68.17	69.54	70.62	72.00	72.40	72.24
WTR YEAR	1980		MAX	67.57	FEB 20, 1980	MIN	72.84	SEP 10, 1980				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	72.54	71.96	71.62	71.71	70.41	-----	-----	-----	70.45	71.54	-----	72.92
10	72.38	71.99	71.92	-----	70.09	70.30	-----	-----	70.77	72.05	72.70	72.61
15	72.31	71.87	71.56	71.20	70.36	-----	-----	-----	70.93	72.12	72.56	72.70
20	72.22	71.68	72.35	-----	-----	-----	-----	-----	71.06	72.15	72.68	72.52
25	72.12	72.10	72.00	70.11	70.19	-----	-----	-----	-----	72.43	72.71	72.57
Eom	72.06	71.39	71.37	70.40	-----	-----	-----	-----	71.67	72.73	72.60	72.15
WTR YEAR	1981		MAX	70.09	FEB 10, 1981	MIN	72.92	SEP 5, 1981				

Oct. 20, 1981	71.89	Mar. 17, 1982	68.68	May 18, 1982	67.65	Aug. 23, 1982	65.99
Dec. 7	70.39	Apr. 19	67.71	June 21	66.85	Sept. 20	66.70
Feb. 22, 1982	68.80						

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5								64.77	64.56	66.31	67.59	69.47
10								65.06	65.01	65.58	67.96	69.75
15								64.93	65.11	65.52	68.41	69.86
20								64.90	65.69	65.73	68.92	70.04
25								64.53	64.99	66.12	66.38	69.41
Eom								64.59	64.46	66.11	66.83	69.56
WTR YEAR	1983		MAX	64.46	MAY 31, 1983	MIN	70.11	SEP 30, 1983				

JONES COUNTY

415808N091160501. Local number, 83-4-25 C5881.

LOCATION.--Lat 41°58'08", Long 91°16'05", Hydrologic Unit 07080103, 4 mi north of the Town of Mechanicsville and 1 mi west of County Road X-40.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dolomite of Silurian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in to 41 ft, 5 in to 517 ft, depth 517 ft, cased to 41 ft, open end.

DATUM.--Altitude of land-surface datum is 807 ft. Measuring point: Top of casing 1.00 ft above land-surface datum.

REMARKS.--White Oak Creek well. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--July 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.24 ft below land-surface datum, Apr. 3, 1979; lowest 5.49 ft below land-surface datum, Jun. 29, 1977.

GROUND-WATER LEVELS

JONES COUNTY

415808N091160501. Local number, 83-4-25 CBBB1.--Continued.

July 1, 1976	5.00								
June 29, 1977	5.49	Aug. 9, 1977	5.45						
Oct. 27, 1977	2.47	Jan. 24, 1978	3.26	Apr. 22, 1978	2.35	Aug. 22, 1978	3.80		
Nov. 23	2.81	Feb. 28	4.03	May 31	2.08	Sept. 20	4.30		
Dec. 16	2.90	Mar. 24	3.16	July 18	2.98				
Oct. 19, 1978	3.70	Jan. 10, 1979	3.77	Apr. 3, 1979	1.24	July 3, 1979	2.83		
Nov. 8	4.07	Mar. 7	3.17	June 4	2.35	Aug. 6	3.61		
Dec. 19	3.32								
Oct. 5, 1979	3.78	Jan. 4, 1980	4.44	Mar. 3, 1980	4.07	June 20, 1980	3.86		
Nov. 5	4.07	Feb. 1	4.14	May 1	4.14	Aug. 14	4.64		
Dec. 3	4.17								
Oct. 17, 1980	2.67	Feb. 25, 1981	3.33	Apr. 16, 1981	2.13	June 23, 1981	3.02		
Dec. 9, 1981	2.01	Sept. 27, 1982	3.09						
Mar. 16, 1983	2.22	Aug. 24, 1983	4.27						

LINN COUNTY

415422N091422601. Local number, 82-7-18 CDCD1.

LOCATION.--Lat 41°54'22", long 91°42'26", Hydrologic Unit 07080205, on 76th Avenue SW, approximately 1.5 mi west of U.S. Highway 218, Cedar Rapids.

Owner: Lester Petrak.

AQUIFER.--Glacial Drift of Pleistocene Age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 14 ft, cribbed with brick.

DATUM.--Altitude of land-surface datum is 835 ft. Measuring point; Base of recorder shelter 0.25 ft above land-surface datum.

REMARKS.--None.

PERIOD OF RECORD.--July 1959 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.09 ft below land-surface datum, Aug. 4, 1968; lowest ell. 75 ft below land-surface datum, Feb. 8, 1977.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	8.00	4.71	3.42	5.15	7.01	5.04	4.19	5.07	5.54	5.73	8.32	9.57
10	4.90	4.96	4.52	5.32	7.24	4.84	4.26	5.27	6.09	6.20	8.58	9.57
15	4.96	4.45	4.89	5.58	6.70	5.06	4.23	4.93	6.58	6.84	8.83	9.74
20	5.28	4.85	5.08	6.04	4.21	5.27	4.76	4.45	6.93	7.34	9.07	9.42
25	5.74	5.10	5.20	6.37	4.78	5.54	4.96	4.96	7.24	7.69	9.33	9.22
Eom	5.94	5.07	4.85	6.75	4.88	4.45	5.13	5.23	6.66	8.04	9.38	9.58
WTR YEAR	1983	MAX	3.42	DEC 5, 1982	MIN	9.74	SEP 15, 1983					

e Estimated

418816N091393401. Local number, 83-7-28 ADDA1.

LOCATION.--Lat 41°58'16", long 91°39'34", Hydrologic Unit 07080205, 320 11th Avenue SE, Cedar Rapids.

Owner: Robert Chadima.

AQUIFER.--Limestone of Silurian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in, depth 420 ft, cased to 75 ft, open end.

DATUM.--Altitude of land-surface datum is 735 ft. Measuring point; Top of recorder platform 2.95 ft below land-surface datum.

REMARKS.--Formerly The Kacena Co., Inc.

PERIOD OF RECORD.--January 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 51.10 ft below land-surface datum, Feb. 25, 1983; lowest 101.40 ft below land-surface datum, Jul. 27, 1981.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	88.91	88.06	86.15	86.32	86.73	86.50	86.85	86.67	85.06	84.07	-----	-----
10	88.47	87.62	86.78	85.68	86.84	87.09	86.52	86.78	84.82	84.15	-----	-----
15	88.67	87.62	86.80	86.78	86.80	86.75	-----	86.73	-----	84.53	-----	-----
20	88.57	87.23	86.45	86.81	86.83	86.88	-----	86.68	-----	84.75	-----	-----
25	88.40	87.52	85.97	86.67	87.25	87.23	86.44	86.29	83.57	85.06	88.02	e90.00
Eom	87.77	86.50	86.36	86.78	86.79	86.72	86.60	85.45	83.58	e85.50	88.58	90.42
WTR YEAR	1983	MAX	83.57	JUN 25, 1983	MIN	90.42	SEP 30, 1983					

e Estimated

GROUND-WATER LEVELS

LINN COUNTY

415509N091461801. Local number, 82-8-20 ACBB1.
 LOCATION.--Lat 41°58'09", long 91°45'18", Hydrologic Unit 070802005, approximately 1.8 mi southwest of the Town of Fairfax, just northwest of Iowa Highway 149.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Limestone of Devonian Age and Dolomite of Silurian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in, depth 569 ft, cased to 100.5 ft, open end.
 DATUM.--Altitude of land-surface datum is 842 ft. Measuring point; Top of casing 0.88 ft above land-surface datum.
 REMARKS.--Rock Pile well. Water levels from March 1974 to May 1978 from recorder graph. Water levels from October 1978 to current year, in ft, below land-surface datum, from steel tape measurements.
 PERIOD OF RECORD.--March 1974 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 96.74 ft below land-surface datum, Jun. 10, 1974; lowest 108.74 ft below land-surface datum, Jul. 20, 1977.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1973-74

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5						98.71		98.16	97.03	97.34	98.44	98.65
10						99.08	98.75	98.05	96.74	97.68		98.56
15						98.75	98.63	97.77	96.90		98.49	
20						98.74	98.45	97.85	96.85	98.35		98.44
25						98.83		97.67	97.03			98.63
Eom						98.43	98.27	97.14	96.95	98.74	98.40	98.66
WTR YEAR 1974 MAX 96.74 JUN 10, 1974 MIN 99.08 MAR 10, 1974												

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1974-75

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5										99.74	102.06	101.76
10	98.70	98.81								99.98		101.86
15	98.88	98.91							98.78	100.35		101.91
20	98.83	98.83							99.27	100.96	102.07	101.63
25	98.66	98.28							99.54	101.35	101.84	101.91
Eom		99.20							99.69	101.67		101.87
WTR YEAR 1975 MAX 98.28 NOV 25, 1974 MIN 102.07 AUG 20, 1975												

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1975-76

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	101.93	102.43	102.33	102.40	102.93	102.84		102.39	102.23		103.38	104.62
10	102.03	102.02	102.20	102.64	102.49	102.88	102.91	102.51	102.10		103.59	104.94
15	102.08	102.30	102.42		102.76	102.94	102.83	102.29	102.11	103.03	103.76	105.15
20	102.26	101.98	102.45	102.81	102.80	102.51	102.96	102.30	102.20	103.39	103.84	105.15
25	102.44	102.52	102.44	102.63	102.88	102.77	102.72	102.26	102.18	103.64	103.80	105.26
Eom	102.53	102.30	102.45	102.70	102.81	102.72	102.90	102.03	102.18	103.40	104.08	105.09
WTR YEAR 1976 MAX 101.93 OCT 5, 1975 MIN 105.26 SEP 25, 1976												

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	105.12	104.64	104.69				104.86	105.31	105.14	105.14		105.31
10	105.12						105.30	105.67	105.64	107.90	107.37	105.02
15	104.82	104.55			105.20	104.92	105.36	105.58	105.76	108.18	107.15	105.95
20	104.99	104.38			105.04	105.00		105.80	105.68	108.34	106.91	105.72
25	104.73	104.24			104.58	105.15	105.61	105.90	105.90	108.10	106.72	105.35
Eom	104.73	104.60			104.73	105.14	105.60	105.93	105.34	107.71	106.45	105.28
WTR YEAR 1977 MAX 104.24 NOV 25, 1976 MIN 108.34 JUL 20, 1977												

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1977-78

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	105.34				102.43	102.44	102.42					
10	104.94	103.92			102.43		102.26					
15	104.99			102.32	102.30		102.58					
20	104.81	103.50	102.54	102.30	102.25							
25	104.78		102.65	101.92	102.37	102.72	102.37					
Eom	104.29		102.69	102.34	102.42	102.28	102.24					
WTR YEAR 1978 MAX 101.92 JAN 25, 1978 MIN 105.34 OCT 5, 1977												

GROUND-WATER LEVELS

LINN COUNTY

415509N091461801. Local number, 82-8-20 ACBB1.--Continued.

Oct. 12, 1978	102.84	Mar. 9, 1979	99.92	June 5, 1979	101.91	Sept. 13, 1979	104.42
Nov. 9	101.77	Apr. 3	100.27	July 9	104.42		
Dec. 6	101.10	May 9	101.72	Aug. 8	101.91		
Oct. 9, 1979	102.36	Dec. 7, 1979	102.19	Feb. 4, 1980	102.82	May 21, 1980	104.44
Nov. 6	102.60	Jan. 8, 1980	102.71	Mar. 15	102.51	July 18	105.95
Nov. 18, 1980	105.52	Mar. 18, 1981	104.71	June 2, 1981	105.24	Sept. 8, 1981	104.36
Feb. 3, 1981	105.11						
Oct. 20, 1981	103.10	Dec. 7, 1981	101.82	Apr. 22, 1982	107.08	Sept. 27, 1982	100.97
Mar. 17, 1983	99.91	Aug. 24, 1983	103.44				

415725N091410401. Local number, 83-7-32 ACDC1.

LOCATION.--Lat 41°57'25", long 91°41'04", Hydrologic Unit 07080205, northwest corner of 22nd Avenue SW and 11th Street SW, Cedar Rapids.

Owner: Floyd Fetter.

AQUIFER.--Limestone of Silurian Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in, depth 282 ft.

DATUM.--Altitude of land-surface datum is 805 ft. Measuring point; Plug in well cover at land-surface datum.

REMARKS.--Name corrected from Felter to Fetter. Casing information not available. Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--July 1940 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 75.80 ft below land-surface datum, Jan. 25, 1942; lowest 107.00 ft below land-surface datum, Sept. 16, 1976.

Oct. 20, 1982	94.12	Jan. 19, 1983	91.20	Apr. 20, 1983	92.10	July 21, 1983	95.34
Nov. 22	94.02	Feb. 23	92.16	May 23	91.66	Aug. 22	98.02
Dec. 21	92.24	Mar. 22	91.90	June 22	93.44	Sept. 20	98.54

420526N091370701. Local number, 84-7-13 BCBB1.

LOCATION.--Lat 42°05'26", long 91°37'07", Hydrologic Unit 07080205, approximately 0.25 mi south of the junction of County Roads W-58 and E-34, or approximately 3.75 mi north of the City of Marion.

Owner: U.S. Geological Survey.

AQUIFER.--Glacial Drift of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1.25 in, depth 17 ft, cased to 15 ft, screened 15 to 17 ft.

DATUM.--Altitude of land-surface datum is 882 ft. Measuring point; Top of casing 0.75 ft above land-surface datum.

REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--September 1948 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.93 ft below land-surface datum, May 18, 1982; lowest 12.90 ft below land-surface datum, Dec. 3, 1956.

Oct. 20, 1982	6.18	Jan. 19, 1983	3.84	Apr. 20, 1983	1.55	July 21, 1983	4.95
Nov. 22	2.13	Feb. 23	2.89	May 23	2.22	Aug. 22	6.82
Dec. 21	2.55	Mar. 22	2.59	June 22	4.38	Sept. 20	6.01

421149N091403301. Local number, 85-7-4 CCCC1.

LOCATION.--Lat 42°11'49", long 91°40'33", Hydrologic Unit 07080205, approximately 5 mi east of the Town of Center Point, north side of County Road E-15.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dolomite of Silurian Age and Limestone of Devonian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in, cased to 41 ft, 5 in liner 129 to 147 ft, depth 435 ft, open end.

DATUM.--Altitude of land-surface datum is 912 ft. Measuring point; Top of casing at land-surface datum.

REMARKS.--Alice well. Water levels from July 1973 to March 1974 and October 1979 to current year are from steel tape measurements, in ft, below land surface datum. Water levels from March 1974 to September 1979 from recorder graph.

PERIOD OF RECORD.--July 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.06 ft below land-surface datum, Jun. 10, 1974; lowest 32.74 ft below land-surface datum, Mar. 31, 1977.

Jul. 19, 1973	23.30						
Oct. 23, 1973	22.28	Mar. 6, 1974	20.31				

GROUND-WATER LEVELS

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LINN COUNTY

421149N091403301. Local number, 85-7-4 CCCC1.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1973-74

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5							-----	18.67	17.40	17.76	19.54	20.66
10							19.15	18.64	17.06	17.99	-----	20.74
15							-----	-----	17.24	18.30	19.96	20.94
20							18.68	17.17	17.55	18.58	-----	21.16
25						19.95	-----	17.14	-----	18.86	20.25	21.30
Eom						-----	18.82	17.20	17.34	-----	20.41	21.50
WTR YEAR	1974	MAX	17.06	JUN 10, 1974		MIN	21.50	SEP. 30, 1974				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1974-75

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	21.07	-----	20.75	20.84	21.38	-----	18.30	18.19	-----	-----	-----
10	21.59	21.06	20.98	20.62	-----	21.56	-----	-----	18.52	18.75	-----	-----
15	21.70	21.00	20.76	20.63	21.03	-----	-----	-----	-----	19.01	-----	-----
20	21.67	20.90	20.73	20.50	21.06	-----	-----	17.73	-----	19.25	-----	-----
25	21.60	21.17	20.77	20.41	21.15	-----	-----	-----	-----	-----	-----	-----
Eom	21.08	21.11	20.73	20.89	21.33	-----	18.32	18.06	-----	-----	-----	-----
WTR YEAR	1975	MAX	17.73	MAY 20, 1975		MIN	21.70	OCT 15, 1974				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1975-76

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	29.56	30.50	30.47	30.92	31.60	31.32	29.87	27.36	27.30	-----	28.82	30.16
10	29.78	30.42	30.40	30.89	31.20	30.94	29.73	27.33	27.12	-----	29.11	30.27
15	29.89	30.40	30.72	30.79	31.36	30.85	29.61	27.03	27.02	28.00	29.37	30.45
20	29.97	30.10	30.81	31.24	31.60	30.04	29.46	27.02	27.41	28.25	29.60	30.48
25	30.29	30.78	30.68	31.09	31.48	30.10	29.14	27.10	27.45	28.52	29.73	30.60
Eom	30.19	30.50	30.76	31.11	31.46	30.01	28.18	26.99	27.59	28.56	29.87	30.70
WTR YEAR	1976	MAX	26.99	MAY 31, 1976		MIN	31.60	FEB 5 and 20, 1975				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	30.84	31.36	32.02	-----	-----	32.56	32.28	32.07	31.85	32.26	32.48	30.86
10	30.97	-----	32.07	-----	-----	-----	32.39	32.27	31.95	32.46	32.22	30.87
15	31.08	31.55	-----	32.31	32.56	32.60	32.47	32.10	32.11	32.66	32.12	30.65
20	31.14	31.52	-----	-----	32.57	32.71	32.33	32.10	31.98	32.50	31.61	29.80
25	31.25	31.34	-----	-----	32.56	32.69	32.30	32.09	32.04	32.54	31.37	28.67
Eom	31.44	31.83	-----	-----	32.56	32.74	32.38	31.98	32.00	32.39	30.96	28.00
WTR YEAR	1977	MAX	28.00	SEP 30, 1977		MIN	32.74	MAR 31, 1977				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1977-78

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	27.74	25.53	25.22	25.19	-----	27.14	26.32	24.68	24.91	-----	25.42	26.68
10	26.97	25.00	25.74	-----	-----	27.26	25.80	24.74	25.02	-----	25.45	26.82
15	26.83	-----	25.32	-----	-----	27.52	25.84	24.71	25.23	-----	25.59	26.97
20	26.59	24.74	25.20	-----	26.65	27.21	25.11	24.71	25.35	25.92	26.12	27.10
25	26.18	25.09	25.25	25.41	27.01	27.04	25.09	24.70	25.41	25.22	26.18	27.31
Eom	25.57	24.92	25.20	-----	27.06	26.34	24.76	24.73	25.60	25.22	25.49	27.20
WTR YEAR	1978	MAX	24.68	MAY 5, 1978		MIN	27.74	OCT 5, 1977				

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1978-79

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	27.15	27.11	26.24	27.10	-----	28.20	24.96	24.75	24.32	25.23	25.92	25.93
10	27.27	27.18	26.51	27.10	-----	28.35	24.75	23.68	24.80	25.18	26.06	25.93
15	27.15	27.42	26.29	27.10	-----	28.50	24.62	24.02	24.58	25.30	26.43	26.33
20	27.17	27.35	26.09	-----	27.75	27.54	24.48	23.89	24.49	25.45	26.23	26.28
25	26.91	26.80	26.65	-----	28.09	26.59	24.10	24.13	24.90	25.50	25.96	26.64
Eom	27.45	26.61	-----	-----	27.91	25.88	24.14	24.16	24.74	25.78	25.74	26.75
WTR YEAR	1979	MAX	23.68	MAY 10, 1979		MIN	28.50	MAR 15, 1979				

GROUND-WATER LEVELS

LINN COUNTY

421149N091403301. Local number, 85-7-4 CCCC1.--Continued.

Oct. 10, 1979	26.93	Jan. 9, 1980	29.11	Mar. 7, 1980	28.91	June 20, 1980	27.47
Nov. 7	27.75	Feb. 4	28.83	Apr. 22	28.16	Aug. 14	28.61
Dec. 7	28.08						
Oct. 17, 1980	28.47	Feb. 25, 1981	28.35	Apr. 15, 1981	29.59		
Nov. 18, 1982	25.38	Apr. 19, 1983	23.19	Aug. 24, 1983	26.94		

LYON COUNTY

431812N096302701. Local number, 98-48-16 DDAD1.
 LOCATION.--Lat 43°18'12", long 96°30'27", Hydrologic Unit 10170203, approximately 3.5 mi east of the City of Canton, S.D., south of U.S. Highway 18.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 358 ft, cased to 358 ft, perforated 335 to 355 ft.
 DATUM.--Altitude of land-surface datum is 1,268 ft. Measuring point; Top of casing 2.00 ft above land-surface datum.
 REMARKS.--Well D-20. Sioux Quartzite from 353 to 358 ft. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 93.40 ft below land-surface datum, Mar. 28, 1980 and May 6, 1980; lowest 97.56 ft below land-surface datum, Dec. 9, 1982.

Dec. 28, 1978	95.20	Feb. 19, 1979	94.45	Apr. 3, 1979	94.90	Aug. 29, 1979	96.45
Jan. 3, 1979	95.25						
Oct. 24, 1979	94.10	Mar. 28, 1980	93.40	June 6, 1980	93.41	Aug. 5, 1980	94.26
Feb. 6, 1980	93.86	May 6	93.40	July 10	94.06	Sept. 3	94.53
Feb. 29	93.80						
Dec. 12, 1980	95.90						
May 6, 1982	96.75	Aug. 12, 1982	97.44				
Dec. 9, 1982	97.56	Jan. 26, 1983	96.88	Apr. 20, 1983	96.05	July 13, 1983	96.08

432140N095595301. Local number, 99-44-26 DDDD1.
 LOCATION.--Lat 43°21'40", long 95°59'53", Hydrologic Unit 10170204, 1 mi north of the City of George, west of Iowa Highway 339.
 Owner: State of Iowa.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in, depth 38 ft, lined with tile.
 DATUM.--Altitude of land-surface datum is 1,400 ft. Measuring point; Plug in well cover 2.01 ft above land-surface datum.
 REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--October 1940 to June 1943, May 1947 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.41 ft above land-surface datum, May 9, 1979; lowest 9.47 ft below land-surface datum, Oct. 24, 1940.

Dec. 8, 1982	0.62	Jan. 25, 1983	0.81	Apr. 20, 1983	0.33	July 12, 1983	1.33
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432553N096105701. Local number, 99-45-5 ABAC1.
 LOCATION.--Lat 43°26'53", long 96°10'55", Hydrologic Unit 10170204, .05 mi south of Iowa Highway 9 on 2nd Street, Rock Rapids.
 Owner: City of Rock Rapids.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in, depth 375 ft, cased to 296 ft, open end.
 DATUM.--Altitude of land-surface datum is 1,368 ft. Measuring point; Plug in cover over casing 1.00 ft above land-surface datum.
 REMARKS.--City test well No. 3. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--August 1960 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 100.08 ft below land-surface datum, Jul. 27, 1964; lowest 114.33 ft below land-surface datum, Oct. 22, 1981.

Dec. 8, 1982	114.27	Apr. 20, 1983	113.84	June 2, 1983	113.85	July 12, 1983	113.84
Jan. 25, 1983	113.90						

GROUND-WATER LEVELS

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LYON COUNTY

432601N096335511. Local number, 100-48-31 CCCC11.
LOCATION.--Lat 43°26'01", long 96°33'55", Hydrologic Unit 10170203, .5 mi west and 2.5 mi south of the Village of Granite.

Owner: Iowa Geological Survey and U.S. Geological Survey.
AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 657 ft, cased to 657 ft, perforated 450 to 455 ft and 630 to 650 ft.
DATUM.--Altitude of land-surface datum is 1,417 ft. Measuring point; Top of casing at land-surface datum.
REMARKS.--Well D-19. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 153.95 ft below land-surface datum, Jul. 13, 1983; lowest 157.53 ft below land-surface datum, Aug. 12, 1982.

Dec. 8, 1978	156.55	Jan. 3, 1979	156.85	Apr. 3, 1979	156.10	Aug. 29, 1979	154.85
Oct. 24, 1979	155.25	Mar. 26, 1980	156.40	June 6, 1980	156.07	Aug. 5, 1980	156.41
Feb. 6, 1980	155.30	Apr. 4	156.30	July 10	156.21	Sept. 3	156.54
Feb. 29	155.20	May 6	156.09				
Dec. 12, 1980	157.45						
May 6, 1982	157.16	Aug. 12, 1982	157.53				
Dec. 9, 1982	156.67	Jan. 26, 1983	156.50	Apr. 20, 1983	154.42	July 13, 1983	153.95

MADISON COUNTY

411727N093483001. Local number, 75-26-23 AAAC1.
LOCATION.--Lat 41°17'27", long 93°48'30", Hydrologic Unit 07100008, near the shelter house in the city park, St. Charles.

Owner: City of St. Charles
AQUIFER.--Limestone of Mississippian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in, depth 1,058 ft, cased to 657 ft, open end.
DATUM.--Altitude of land-surface datum is 1,067 ft. Measuring point; Plug in well cover 1.20 ft above land-surface datum.
REMARKS.--City well No. 1. Water levels, in ft, below land-surface datum from steel tape measurements.
PERIOD OF RECORD.--November 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 261.62 ft below land-surface datum, Nov. 20, 1962; lowest 271.33 ft below land-surface datum, Sept. 7, 1983.

Mar. 23, 1983	270.82	Sept. 7, 1983	271.33
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MARION COUNTY

411323N093142601. Local number, 74-21-11 BBCD1.
LOCATION.--Lat 41°13'23", long 93°14'26", Hydrologic Unit 07100008, north of the water tower in the town square, Melcher.

Owner: Town of Melcher.
AQUIFER.--Glacial Drift of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in, depth 12.2 ft, lined with tile.
DATUM.--Altitude of land-surface datum is 948 ft. Measuring point; Top of well cover 0.75 ft above land-surface datum.
REMARKS.--Town well No. 2. Water levels, in ft, below land-surface datum from steel tape measurements. Depth formerly 25 ft, re-measured in 1981.
PERIOD OF RECORD.--March 1950 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.12 ft below land-surface datum, Apr. 24, 1976; lowest 16.27 ft below land-surface datum, Oct. 22, 1953.

Oct. 10, 1982	3.67	Jan. 10, 1983	3.65	Apr. 10, 1983	4.01	July 10, 1983	5.35
Oct. 25,	4.41	Jan. 25	4.52	Apr. 22	2.99	July 23	6.10
Nov. 10	3.67	Feb. 10	3.61	May 10	3.21	Aug. 10	6.10
Nov. 26	4.21	Feb. 22	2.54	May 24	3.42	Aug. 24	6.09
Dec. 10	2.99	Mar. 10	3.61	June 10	4.41	Sept. 10	6.95
Dec. 22	3.88	Mar. 23	4.09	June 23	4.91	Sept. 22	5.95

MARSHALL COUNTY

420355N092534701. Local number, 84-18-24 CDCA1.
LOCATION.--Lat 42°03'55", long 92°53'47", Hydrologic Unit 07080208, east of Riverview Park and south of the city sewage treatment plant, Marshalltown.

Owner: City of Marshalltown.
AQUIFER.--Glacial Sand and Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in, depth 200 ft, cased to 190 ft, screened 190 to 200 ft.
DATUM.--Altitude of land-surface datum is 871 ft. Measuring point; Top of casing at land-surface datum.
REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.
PERIOD OF RECORD.--May 1949 to August 1971, March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.92 ft below land-surface datum, Jul. 13, 1951; lowest 54.95 ft below land-surface datum, May 8, 1981.

Oct. 6, 1982	41.60	Mar. 17, 1983	36.25	Apr. 27, 1983	37.95	July 29, 1983	41.88
Nov. 10	39.95						

GROUND-WATER LEVELS

MONTGOMERY COUNTY

405841N095012701. Local number, 71-36-6 DADA1.
 LOCATION.--Lat 40°58'41", long 95°01'27", Hydrologic Unit 10240009, east of Viking Lake in Viking Lake State Park.
 Owner: State of Iowa.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1.25 in, depth 38 ft, cased to 36 ft, screened 36 to 38 ft.
 DATUM.--Altitude of land-surface datum is 1,081 ft. Measuring point; Top of casing 3.02 ft above land-surface datum.
 REMARKS.--Site identification number corrected 1983. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--April 1950 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.52 ft below land-surface datum, May 31, 1951; lowest 30.99 ft below land-surface datum, Apr. 26, 1950.

Oct. 21, 1982	13.79	Jan. 11, 1983	14.00	Apr. 27, 1983	12.99	July 20, 1983	13.53
Nov. 23	13.90	Feb. 24	14.01	May --	e13.20	Aug. 31	14.11
Dec. 2	14.04	Mar. 17	13.80	June 8	13.36	Sept. 15	e14.48

e Estimated

MUSCATINE COUNTY

412120N091080401. Local number, 76-2-30 CBAA1.
 LOCATION.--Lat 41°21'20", long 91°08'04", Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm.
 Owner: U.S. Geological Survey.
 AQUIFER.--Alluvial Sand and Gravel of Holocene Age.
 WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in, depth 27 ft, cased to 24 ft, screened 24 to 27 ft.
 DATUM.--Altitude of land-surface datum is 546 ft. Measuring point; Base of recorder shelter 3.70 ft above land-surface datum.
 REMARKS.--Site identification number corrected 1983.
 PERIOD OF RECORD.--May 1966 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.51 ft below land-surface datum, May 16, 1973; lowest 15.39 ft below land-surface datum, Aug. 10, 1980.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	11.76	12.08	11.75	11.30	11.62	11.80	11.44	11.18	11.76	12.61	13.75	14.39
10	11.82	12.13	11.27	11.26	11.70	11.92	11.12	11.27	11.93	12.74	13.90	14.44
15	11.86	12.18	11.12	11.37	11.77	11.95	11.03	11.34	12.11	12.96	14.03	14.49
20	11.92	12.19	11.14	11.40	11.83	12.00	10.95	11.41	12.28	13.11	14.15	14.48
25	11.97	12.22	11.22	11.46	11.89	12.08	10.98	11.51	12.50	13.33	14.24	14.25
Eom	12.03	12.24	11.30	11.55	11.89	12.07	11.09	11.64	12.58	13.54	14.33	14.21
WTR YEAR 1983	MAX	10.95	APR. 20, 1983	MIN	14.49	SEPT. 15, 1983						

O'BRIEN COUNTY

425610N095250611. Local number, 94-39-26 BADB11.
 LOCATION.--Lat 42°56'10", long 95°25'06", Hydrologic Unit 10230003, near a dead-end road just south of the Little Sioux River, .9 mi north of Iowa Highway 10, approximately 5 mi southeast of the Town of Sutherland.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2.50 in, depth 329 ft, cased to 329 ft, perforated 291 to 295 ft.
 DATUM.--Altitude of land-surface datum is 1,212 ft. Measuring point; Top of casing at land-surface datum.
 REMARKS.--Well D-3. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--April 1980 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 35.44 ft below land-surface datum, Aug. 3, 1983; lowest 36.85 ft below land-surface datum, Dec. 15, 1980.

Apr. 7, 1980	36.80	June 4, 1980	36.28	Aug. 6, 1980	36.55	Sept. 9, 1980	36.70
May 6	36.29	July 10	36.39				
Dec. 15, 1980	36.85	Sept. 12, 1981	36.75				
May 5, 1982	36.57	Aug. 6, 1982	36.56				
Nov. 18, 1982	36.26	Feb. 16, 1983	36.02	May 12, 1983	35.92	Aug. 3, 1983	35.44

O'BRIEN COUNTY

425808N095480311. Local number, 94-42-9 DDDD11.

LOCATION.--Lat 42°58'08", long 95°48'03", Hydrologic Unit 10230003, along Iowa Highway 143, 1 mi west and 1 mi north of the Village of Germantown.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 638 ft, cased to 638 ft, perforated 516 to 536 ft.

DATUM.--Altitude of land-surface is 1,440 ft. Measuring point; Top of casing 4.00 ft above land-surface datum.

REMARKS.--Well D-42. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--July 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 215.09 ft below land-surface datum, May 5, 1982; lowest 260.64 ft below land-surface datum, Jul. 10, 1980.

July 10, 1980	260.64	Aug. 6, 1980	254.70	Sept. 10, 1980	248.84		
Dec. 12, 1980	236.85	Sept. 10, 1981	238.15				
May 6, 1982	215.09	June 30, 1982	216.15				
Nov. 3, 1982	219.87	Jan. 25, 1983	221.65	Apr. 19, 1983	223.23	July 11, 1983	224.21

430930N095350401. Local number, 96-40-5 DDDA1.

LOCATION.--Lat 43°09'30", long 95°35'04", Hydrologic Unit 10230003, approximately 3 mi east of the town of Sanborn and 2 mi south of U.S. Highway 18.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age and Sandy Shale of Ordovician Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 701 ft, cased to 701 ft, perforated 661 to 701 ft.

DATUM.--Altitude of land-surface datum is 1,560 ft. Measuring point; Top of casing 4.00 ft above land-surface datum.

REMARKS.--Well D-41. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 359.37 ft below land-surface datum, Sep. 10, 1980; lowest 361.40 ft below land-surface datum, Jul. 16, 1980.

June 18, 1980	361.00	July 16, 1980	361.40	Sept. 10, 1980	359.37		
Dec. 12, 1980	359.80	Sept. 10, 1981	359.69				
May 6, 1982	359.90	June 30, 1982	360.14				
Nov. 3, 1982	359.94	Jan. 25, 1983	360.07	Apr. 19, 1983	359.71	July 12, 1983	359.70

OSCEOLA COUNTY

431620N095250501. Local number, 98-39-26 CDAD1.

LOCATION.--Lat 43°16'20", long 95°28'05", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 662 ft, cased to 662 ft, perforated 622 to 662 ft.

DATUM.--Altitude of land-surface datum is 1,402 ft. Measuring point; Top of low pipe 1.47 ft above land-surface datum.

REMARKS.--Well D-38 Deep Hibbing. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 197.98 ft below land-surface datum, Jul. 29, 1983; lowest 199.82 ft below land-surface datum, Aug. 5, 1980.

June 17, 1980	198.08	July 10, 1980	198.38	Aug. 5, 1980	199.52	Sept. 3, 1980	198.37
Nov. 25, 1980	198.58	Sept. 10, 1981	198.24				
May 22, 1982	198.42	July 25, 1982	198.39	Aug. 25, 1982	199.43		
Oct. 12, 1982	198.24	July 29, 1983	197.98	Aug. 3, 1983	199.05	Aug. 29, 1983	198.68
June 7, 1983	198.07						

GROUND-WATER LEVELS

OSCEOLA COUNTY

431620N095250511. Local number, 98-39-26 CDAD11.

LOCATION.--Lat 43°16'20", long 95°25'05", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 345 ft, cased to 345 ft, perforated 335 to 345 ft.

DATUM.--Altitude of land-surface datum is 1,402 ft. Measuring point; Top of high pipe 2.60 ft above land-surface datum.

REMARKS.--Well D-38 Shallow Hibbing. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 192.20 ft below land-surface datum, Sep. 10, 1981; lowest 194.11 ft below land-surface datum, Jul. 25, 1982.

June 17, 1980	192.62	July 10, 1980	192.35	Aug. 5, 1980	192.48	Sept. 3, 1980	192.43
Nov. 26, 1980	193.15	Sept. 10, 1981	192.20				
May 22, 1982	193.11	July 25, 1982	194.11	Aug. 25, 1982	193.17		
Oct. 12, 1982	193.19	July 29, 1983	193.18	Aug. 3, 1983	193.26	Aug. 29, 1983	193.24
June 7, 1983	193.16						

431613N095251801. Local number, 98-39-26 CDCC1.

LOCATION.--Lat 43°16'13", long 95°25'18", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 500 ft, cased to 500 ft, perforated 490 to 500 ft.

DATUM.--Altitude of land-surface datum is 1,395 ft. Measuring point; Top of casing 2.70 ft above land-surface datum.

REMARKS.--Well D-39. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 189.99 ft below land-surface datum, Jun. 17, 1980; lowest 192.86 ft below land-surface datum, Aug. 5, 1980.

June 17, 1980	189.99	July 10, 1980	191.49	Aug. 5, 1980	192.86	Sept. 3, 1980	191.22
Nov. 26, 1980	191.60	Sept. 10, 1981	191.57				
May 22, 1982	191.11	July 25, 1982	191.38	Aug. 25, 1982	192.73		
Oct. 12, 1982	191.06	July 29, 1983	191.22	Aug. 3, 1983	191.43	Aug. 29, 1983	191.92
June 7, 1983	191.18						

431620N095482402. Local number, 98-42-33 AAB2.

LOCATION.--Lat 43°16'20", long 95°48'24", Hydrologic Unit 10170204, approximately 2.75 mi south of the Town of Ashton, west of Iowa Highway 60, near the Chicago and Northwestern Railroad tracks.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 400 ft, cased to 400 ft, perforated 385 to 395 ft.

DATUM.--Altitude of land-surface datum is 1,440 ft. Measuring point; Top of casing 2.80 ft above land-surface datum.

REMARKS.--Well D-40. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 195.87 ft below land-surface datum, Jun. 1, 1983; lowest 206.48 ft below land-surface datum, May 6, 1982.

May 6, 1982	206.48	Aug. 11, 1982	203.01				
Dec. 8, 1982	199.88	Mar. 8, 1983	197.91	June 1, 1983	195.87	Aug. 23, 1983	196.68

GROUND-WATER LEVELS

OSCEOLA COUNTY

432828N095283611. Local number, 100-39-17 DCCB11.
 LOCATION.--Lat 43°28'28", long 95°28'36", Hydrologic Unit 10230003, approximately 2 mi west and 2 mi north of the Town of Harris, east of County Road M-12.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in to 461 ft, 4 in to 760 ft, depth 760 ft, cased to 760 ft, perforated 680 to 700 ft.
 DATUM.--Altitude of land-surface datum is 1,560 ft. Measuring point; Top of casing 3.00 ft above land-surface datum.
 REMARKS.--Well D-13. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--July 1980 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 341.80 ft below land-surface datum, Aug. 5, 1980; lowest 343.42 ft below land-surface datum, Nov. 17, 1982 and Aug. 3, 1983.

July 10, 1980	342.40	Aug. 5, 1980	341.80	Sept. 9, 1980	342.50	
Dec. 10, 1980	343.30	Sept. 10, 1981	342.55			
May 6, 1982	342.85	Aug. 25, 1982	343.40			
Nov. 17, 1982	343.42	Feb. 16, 1983	343.28	May 11, 1983	342.89	Aug. 3, 1983 343.42

PAGE COUNTY

404257N095150801. Local number, 68-38-7 CCAA1.
 LOCATION.--Lat 40°42'57", long 95°15'08", Hydrologic Unit 10240005, approximately 2 mi south of the Village of Norwich and 1.5 mi west of County Road M-48.
 Owner: William Brayman.
 AQUIFER.--Glacial Drift of Pleistocene Age.
 WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in, depth 44 ft, lined with tile.
 DATUM.--Altitude of land-surface datum is 1,087 ft. Measuring point; Top of pipe inserted through board cover 1.00 ft above land-surface datum.
 REMARKS.--Measuring point changed September 1983. Site identification number corrected 1983. Water levels, in ft, below land-surface datum from steel tape measurements.
 PERIOD OF RECORD.--May 1934 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.44 ft below land-surface datum, Jun. 23, 1947; lowest 20.96 ft below land-surface datum, Nov. 24, 1958.

Oct. 16, 1982	10.91	Jan. 5, 1983	11.02	May 10, 1983	10.29	Aug. 9, 1983	12.62
Nov. 24	11.82	Feb. 23	9.46	June 22	9.70	Sept. 13	13.86

PLYMOUTH COUNTY

424850N096074801. Local number, 92-45-2 CBCB1.
 LOCATION.--Lat 42°48'50", long 96°07'48", Hydrologic Unit 10230002, approximately 3.8 mi west and .6 mi south of the Village of Oyens.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dolomite of Ordovician Age and Dolomite of Cambrian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in to 161 ft, 4 in to 598 ft, depth 1,089 ft, cased to 598 ft, open end.
 DATUM.--Altitude of land-surface datum is 1,245 ft. Measuring point; Top of casing 3.20 ft above land-surface datum.
 REMARKS.--Well D-21. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--May 1979 to January 1981, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 90.22 ft below land-surface datum, Jul. 11, 1983; lowest 102.10 ft below land-surface datum, Aug. 6, 1980.

May 7, 1979	95.90	Aug. 31, 1979	96.10			
Oct. 4, 1979	96.80	Mar. 12, 1980	95.25	June 8, 1980	99.14	Sept. 4, 1980 101.29
Dec. 12	95.70	Apr. 8	97.57	July 9	100.71	
Feb. 22, 1980	95.30	May 5	99.13	Aug. 6	102.10	
Dec. 15, 1980	99.35					
May 7, 1982	98.18	June 30, 1982	97.98			
Nov. 3, 1982	95.59	Feb. 8, 1983	92.87	Apr. 19, 1983	91.38	July 11, 1983 90.22

424850N096074802. Local number, 92-45-2 CBCB2.
 LOCATION.--Lat 42°48'50", long 96°07'48", Hydrologic Unit 10230002, approximately 3.8 mi west and .6 mi south of the Village of Oyens.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in to 155 ft, 2 in to 365 ft, depth 365 ft, cased to 365 ft, perforated 347 to 365 ft.
 DATUM.--Altitude of land-surface datum is 1,245 ft. Measuring point; Wood cover over well 3.50 ft above land-surface datum.
 REMARKS.--Well D-22. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--April 1979 to January 1981, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 99.85 ft below land-surface datum, Feb. 22, 1980; lowest 106.56 ft below land-surface datum, Sept. 4, 1980.

GROUND-WATER LEVELS

PLYMOUTH COUNTY

424850N096074802. Local number, 92-45-2 CBCB2.--Continued.

Apr. 17, 1979	101.20	May 7, 1979	101.20	Aug. 16, 1979	101.20		
Dec. 12, 1979	100.30	Apr. 8, 1980	100.60	June 8, 1980	102.01	Aug. 6, 1980	105.35
Jan. 21, 1980	99.90	May 6	102.30	July 9	103.84	Sept. 4	106.55
Feb. 22	99.85						
Dec. 15, 1980	102.10						
May 7, 1982	103.23	June 30, 1982	103.98				
Nov. 3, 1982	102.74	Feb. 8, 1983	101.64	Apr. 19, 1983	99.98	July 11, 1983	101.55

424833N096324701. Local number, 92-48-6 DDDA1.

LOCATION.--Lat 42°48'33", long 96°32'47", Hydrologic Unit 10170203, just south of the curve on Iowa Highway 3, 1 mi south of the Town of Akron.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in to 184 ft, 2 in to 581 ft, depth 581 ft, cased to 576 ft, perforated 430 to 434 ft and 510 to 515 ft, open end.

DATUM.--Altitude of land-surface datum is 1,282 ft. Measuring point; Top of casing 4.80 ft above land-surface datum.

REMARKS.--Well D-35. 5 feet of Paleozoic rock open 576 to 581 ft. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--December 1979 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 144.98 ft below land-surface datum, Sept. 27, 1983; lowest 159.82 ft below land-surface datum, Aug. 6, 1980.

Dec. 14, 1979	150.50	Apr. 8, 1980	149.78	June 4, 1980	156.31	Aug. 6, 1980	159.82
Mar. 4, 1980	150.20	May 5	155.87	July 9	156.98	Sept. 9	159.18
Mar. 27	149.95						
Dec. 11, 1980	158.40						
May 6, 1982	154.59	Aug. 12, 1982	153.95				
Mar. 24, 1983	147.81	June 15, 1983	146.00	Sept. 27, 1983	144.98		

425249N096125001. Local number, 93-46-12 DDDD1.

LOCATION.--Lat 42°52'49", long 96°12'50", Hydrologic Unit 10230002, 1 mi west and 1 mi south of the Village of Struble.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2.50 in, depth 570 ft, cased to 570 ft, perforated 356 to 360 ft.

DATUM.--Altitude of land-surface datum is 1,280 ft. Measuring point; top of coupling 4.80 ft above land-surface datum.

REMARKS.--Well D-2. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--March 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 117.78 ft below land-surface datum, Apr. 9, 1980; lowest 122.00 ft below land-surface datum, Mar. 27, 1980.

Mar. 27, 1980	122.00	May 5, 1980	118.14	July 17, 1980	119.37	Sept. 4, 1980	120.27
Apr. 9	117.78	June 5	118.28	Aug. 6	119.93		
Dec. 15, 1980	119.75						
May 5, 1982	120.31	Aug. 12, 1982	121.18				
Dec. 9, 1982	120.80	June 2, 1983	119.58	Aug. 24, 1983	120.69		

SAC COUNTY

422500N095084801. Local number, 88-37-22 CCCC1.

LOCATION.--Lat 42°25'00", long 95°08'48", Hydrologic Unit 10230007, approximately 3 mi south of the Town of Early or .5 mi south of the junction of U.S. Highways 20 and 71.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age and Limestone of Pennsylvanian Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 435 ft, cased to 435 ft, perforated 417 to 435 ft.

DATUM.--Altitude of land-surface datum is 1,320 ft. Measuring point; Top of casing 2.50 ft above land-surface datum.

REMARKS.--Well D-16. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 164.10 ft below land-surface datum, Aug. 16, 1979 and Apr. 27, 1983; lowest 165.40 ft below land-surface datum, Dec. 16, 1980.

GROUND-WATER LEVELS

249

SAC COUNTY

422500N095084801. Local number, 88-37-22 CCCC1.--Continued.

Dec. 12, 1978	164.25	Feb. 13, 1979	164.40	June 10, 1979	164.60	Aug. 16, 1979	164.10
Jan. 4, 1979	164.90	Apr. 2	164.70				
Oct. 5, 1979	164.65	Mar. 5, 1980	164.20	June 2, 1980	164.60	Sept. 8, 1980	164.97
Oct. 30	164.15	Apr. 8	164.62	July 8	164.64		
Dec. 11	164.50	May 5	164.64	Aug. 4	164.94		
Dec. 16, 1980	165.40	Sept. 11, 1981	165.29				
May 5, 1982	165.13	Aug. 23, 1982	165.33				
Nov. 18, 1982	164.75	Feb. 17, 1983	164.59	Apr. 27, 1983	164.10	Aug. 29, 1983	164.64

423013N095175301. Local number, 89-38-26 ABAA1.

LOCATION.--Lat 42°30'13", long 95°17'53", Hydrologic Unit 10230005, northern part of the Town of Schaller.

Owner: Town of Schaller.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled public-emergency-supply artesian well, diameter 10 to 8 in, depth 352 ft, cased to 352 ft, perforated 304 to 352 ft.

DATUM.--Altitude of land-surface datum is 1,376 ft. Measuring point; Edge of pump breather pipe 1.80 ft above land-surface datum.

REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--October 1940 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 210.04 ft below land-surface datum, Mar. 25, 1948; lowest non-pumping 240.10 ft below land-surface datum, May 24, 1977.

Nov. 18, 1982	230.88	Feb. 17, 1983	231.31	Apr. 28, 1983	p246.58	Aug. 4, 1983	222.95
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p Pumping

422850N095171501. Local number, 89-38-36 CBCC1.

LOCATION.--Lat 42°28'50", long 95°17'15", Hydrologic Unit 10230005, just east of Iowa Highway 110, .75 mi south of the Town of Schaller and .25 mi north of U.S. Highway 20.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 521 ft, cased to 512 ft, perforated 410 to 430 ft, open end.

DATUM.--Altitude of land-surface datum is 1,445 ft. Measuring point; Top of casing 4.00 ft above land-surface datum.

REMARKS.--Well D-17. 9 ft of Paleozoic rock open. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 288.05 ft below land-surface datum, Jun. 2, 1980; lowest 291.50 ft below land-surface datum, Apr. 8, 1980.

Dec. 12, 1978	290.30	Feb. 13, 1979	291.00	June 10, 1979	290.80	Aug. 30, 1979	290.80
Jan. 4, 1979	291.00	Apr. 2	290.90	Aug. 16	290.85		
Oct. 15, 1979	288.40	Feb. 6, 1980	291.08	May 5, 1980	290.32	Aug. 4, 1980	290.60
Oct. 30	290.00	Mar. 5	289.90	June 2	288.05	Sept. 5	291.08
Dec. 11	290.85	Apr. 8	291.50	July 8	290.72		
Dec. 16, 1980	291.10	Sept. 11, 1981	291.02				
May 5, 1982	291.16	Aug. 23, 1982	291.35				
Nov. 18, 1982	291.20	Feb. 12, 1983	291.28	May 12, 1983	290.87	Aug. 4, 1983	291.22

SCOTT COUNTY

413544N090212901. Local number, 78-5E-3 AADA1.

LOCATION.--Lat 41°35'44", long 90°02'29", Hydrologic Unit 07080101, at the Bridgeview Elementary School, corner of 12th and Davenport Streets, LeClaire.

Owner: City of LeClaire.

AQUIFER.--Jordan Sandstone of Late Cambrian Age.

WELL CHARACTERISTICS.--Drilled unused municipal artesian well, diameter 16 to 12 in, depth 1,607 ft, cased to 1,128 ft, open end.

DATUM.--Altitude of land-surface datum is 703 ft. Measuring point; Top of casing 1.45 ft above land-surface datum.

REMARKS.--None.

PERIOD OF RECORD.--July 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 247.68 ft below land-surface datum, Jul. 10, 1975; lowest 277.70 ft below land-surface datum, Sept. 25, 1980.

GROUND-WATER LEVELS

SCOTT COUNTY

413544N090212901. Local number, 78-5E-3 AADA1.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30
1974-75

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5											248.96	249.89
10										247.68	248.96	250.00
15											249.09	
20										248.08	249.32	250.28
25										248.42	249.26	
Eom										248.78	249.60	250.62
WTR YEAR	1975		MAX 247.68		JUL 10, 1975		MIN 250.62		SEP 30, 1975			

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30
1975-76

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	250.80	250.59	251.59	251.15	250.49	250.56	250.59	250.81		254.61	257.41	259.04
10	250.79	250.49	251.47	250.82	249.64	250.32	250.53		251.82	255.28	257.81	259.24
15	250.68	250.67	251.61	250.45	250.15	250.49	250.64		251.89	255.77	258.03	259.47
20	250.49		251.58	250.80	250.31	249.99	250.66		252.94	256.33	258.32	259.42
25	250.54	251.51	251.25	250.24	250.17	250.05	250.82		253.35	256.97	258.45	259.55
Eom	250.38	251.38	251.06	250.17	250.30	250.53	251.05		253.79	257.14	258.63	259.30
WTR YEAR	1976		MAX 249.64		FEB 10, 1976		MIN 259.55		SEP 25, 1976			

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30
1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	259.39	259.59	256.91	254.68	253.28			254.26	256.86	259.50		262.37
10	259.37	258.97	256.61	254.18	252.98	252.52	253.10	254.82	257.44	259.82	261.14	262.70
15	259.20	258.62	255.84	253.91	253.10	252.58	253.21	254.97	258.23	260.40		262.64
20	259.56	258.01	255.66	253.68	252.84	253.20	253.34	255.28	258.48	260.56	261.49	
25	259.82	257.27	255.22	253.34	252.47	252.73	253.63	255.81	258.85	260.82	262.00	
Eom	260.03		255.02	253.28	252.70	253.13	254.18	256.45	258.99	261.05	262.14	
WTR YEAR	1977		MAX 252.47		FEB 25, 1977		MIN 262.70		SEP 10, 1977			

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30
1977-78

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	262.89		261.68		260.73		263.14	267.34			275.45	276.77
10	262.55		262.38		260.39		263.74	267.85				276.59
15	262.70		261.64		260.41	261.49	265.07					276.62
20	262.56		261.54	260.81		261.41	265.39					
25	262.45		261.75	260.15		262.06	266.44				276.44	276.74
Eom	262.17		261.62	260.68		262.22	266.88			274.90	276.84	276.41
WTR YEAR	1978		MAX 260.15		JAN 25, 1978		MIN 276.84		AUG 31, 1978			

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30
1978-79

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	275.99	273.10		267.52	264.78	263.27		260.56	261.58		268.00	269.15
10	275.95	272.74			264.64	263.05	261.97			265.98	268.00	269.16
15	275.23	272.60		266.38			262.00	260.61		266.30	268.63	269.56
20	274.79	272.25	267.98	265.38	263.84	262.33	261.67	260.51		267.03	268.44	269.37
25	273.86		267.91	265.32	263.76		261.14	260.99		267.12	268.64	269.58
Eom	273.98		267.62	265.10	263.46					267.55	268.87	269.44
WTR YEAR	1979		MAX 260.51		MAY 20, 1979		MIN 275.99		OCT 5, 1978			

GROUND-WATER LEVELS

SCOTT COUNTY

413544N090212901. Local number, 78-5E-3 AADA1.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	-----	267.18	267.59	-----	-----	-----	-----	264.00	267.19	270.48	-----
10	268.94	268.31	267.52	267.26	-----	-----	-----	-----	264.39	267.80	270.34	-----
15	268.86	268.02	267.54	267.43	-----	-----	-----	-----	265.00	268.21	270.52	-----
20	268.29	268.24	267.62	267.95	-----	-----	-----	-----	264.21	265.73	268.87	270.44
25	268.68	267.64	267.46	-----	-----	-----	-----	-----	263.95	266.22	269.70	270.63
Eom	268.03	267.64	267.46	-----	-----	-----	-----	-----	264.11	266.84	270.20	270.68
WTR YEAR	1980	MAX	263.95	MAY 25, 1980	MIN	277.70	SEP 25, 1980					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	270.11	268.98	267.59	266.04	265.48	265.98	268.66	269.71	272.64	272.73	273.64
10	270.82	-----	268.96	267.62	-----	265.82	-----	268.56	269.89	273.10	272.91	273.72
15	270.85	-----	268.40	266.88	-----	265.20	267.64	268.70	270.19	-----	272.75	274.17
20	270.67	269.46	268.95	266.56	-----	265.42	267.94	269.15	270.51	-----	272.89	274.33
25	270.46	269.76	268.40	265.90	-----	265.88	267.93	268.99	271.05	-----	273.12	274.83
Eom	270.32	268.88	-----	266.10	265.41	265.55	268.24	-----	-----	-----	273.11	274.72
WTR YEAR	1981	MAX	265.20	MAR 15, 1981	MIN	274.83	SEP 25, 1981					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1981-82

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	275.00	272.47	-----	267.45	-----	-----	268.46	267.72	268.78	-----	-----	-----
10	275.14	272.25	269.80	267.54	-----	-----	268.50	267.78	268.74	-----	-----	-----
15	274.92	271.60	269.25	-----	-----	-----	268.15	267.82	268.26	-----	-----	-----
20	274.40	271.28	268.83	-----	-----	-----	268.28	268.10	268.42	-----	-----	-----
25	273.96	270.66	268.46	-----	-----	-----	267.85	268.46	-----	-----	-----	266.26
Eom	273.30	270.12	267.82	-----	-----	-----	268.00	268.40	-----	-----	-----	266.27
WTR YEAR	1982	MAX	266.26	SEP 25, 1982	MIN	275.14	OCT 10, 1981					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	266.14	265.30	265.02	263.92	264.72	265.00	265.04	263.75	263.40	264.80	267.36	269.30
10	265.88	265.09	264.74	263.62	264.84	265.67	264.06	263.94	263.72	264.98	267.51	269.78
15	265.76	265.22	264.27	264.02	264.96	265.34	264.55	263.98	263.53	265.06	268.01	270.02
20	265.75	264.68	-----	264.21	265.28	265.21	264.27	263.96	263.87	-----	268.44	269.90
25	-----	264.94	264.34	264.22	265.39	265.38	263.80	263.92	264.22	266.14	268.98	269.88
Eom	265.23	264.32	264.11	264.55	265.17	264.96	263.78	263.47	264.26	266.63	269.24	269.83
WTR YEAR	1983	MAX	263.40	JUN 5, 1983	MIN	270.02	SEP 15, 1983					

SIoux COUNTY

430140N095573101. Local number, 95-43-7 AAAA1.
 LOCATION.--Lat 43°04'10", Long 95°57'32", Hydrologic Unit 10230002, just south of County Road B-40, 1 mi east of the Village of Newkirk.

Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 681 ft, cased to 681 ft, perforated 641 to 681 ft.

DATUM.--Altitude of land-surface datum is 1,390 ft. Measuring point; Top of casing 3.70 ft above land-surface datum.

REMARKS.--Well D-43. Paleozoic rock from 674 to 681 ft. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--July 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 215.41 ft below land-surface datum, Aug. 6, 1980; lowest 216.64 ft below land-surface datum, Dec. 8, 1982.

July 16, 1980	215.80	Aug. 6, 1980	215.41	Sept. 9, 1980	215.57
Dec. 12, 1980	215.75				
May 6, 1982	215.76	Aug. 11, 1982	216.20		
Dec. 8, 1982	216.64	Mar. 8, 1983	215.48	June 1, 1983	215.70
				Aug. 23, 1983	215.88

GROUND-WATER LEVELS

SIOUX CITY

430913N096033201. Local number, 96-44-8 ADAA1.
 LOCATION.--Lat 43°09'13", long 96°03'32", Hydrologic Unit 10230002, west side of County Road K-64, 2.5 mi west of the Town of Boyden and 2.2 mi south of U.S. Highway 18.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 682 ft, cased to 682 ft, perforated 647 to 667 ft.
 DATUM.--Altitude of land-surface datum is 1,373 ft. Measuring point; top of casing 3.70 ft above land-surface datum.
 REMARKS.--Well D-44. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.
 PERIOD OF RECORD.--August 1980 to December 1980, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 192.96 ft below land-surface datum, Apr. 19, 1983; lowest 193.95 ft below land-surface datum, Dec. 8, 1982.

Aug. 6, 1980	193.03	Sept. 9, 1980	193.05		
Dec. 12, 1980	193.05				
May 6, 1982	193.18	Aug. 11, 1982	193.72		
Dec. 8, 1982	193.95	Jan. 25, 1983	193.57	Apr. 19, 1983	192.96
				Aug. 23, 1983	193.71

WASHINGTON COUNTY

412037N091564701. Local number, 76-9-31 CBBC1.
 LOCATION.--Lat 41°20'37", long 91°56'47", Hydrologic Unit 07080107, at Pepper Quarry on County Highway V-15, 1 mi south of the City of Keota.
 Owner: River Products Co.
 AQUIFER.--Limestone of Mississippian Age and Sandstone of Devonian Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in, depth 136 ft, cased to 19 ft, open end.
 DATUM.--Altitude of land-surface datum is 745 ft. Measuring point; Top of casing 2.88 ft above land-surface datum.
 REMARKS.--Water levels affected by quarrying operations.
 PERIOD OF RECORD.--August 1979 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.77 ft below land-surface datum, Dec. 5, 1982; lowest 23.97 ft below land-surface datum, Sep. 15, 1983.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1978-79

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5												21.36
10												21.76
15												22.60
20												22.96
25											20.45	23.32
Eom											e20.91	23.55
WTR YEAR	1979	MAX	20.45	AUG 25, 1979	MIN	23.55	SEP 30, 1979					

e Estimated

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	23.65	22.64	22.21	23.20	-----	-----	18.71	17.42	-----	18.39	20.12	18.50
10	23.83	23.07	22.88	23.20	21.09	-----	18.63	17.68	-----	18.85	20.24	19.59
15	23.95	23.34	23.32	23.44	-----	-----	-----	-----	17.39	19.26	-----	19.99
20	23.55	23.64	23.52	20.76	-----	20.35	16.01	-----	18.10	19.52	19.58	20.23
25	22.44	21.96	23.00	20.69	-----	e20.45	16.67	-----	17.84	19.86	20.22	20.51
Eom	22.90	22.11	23.02	20.95	-----	20.01	17.05	-----	18.35	20.14	20.21	20.74
WTR YEAR	1980	MAX	16.01	APR 20, 1980	MIN	23.95	OCT 15, 1979					

e Estimated

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1980-81

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	20.93	20.33	20.86	18.07	19.54	-----	18.55	-----	17.29	-----	18.50	21.00
10	21.00	20.41	-----	18.50	-----	-----	18.49	-----	17.68	-----	18.96	21.11
15	21.07	20.44	16.43	18.60	19.41	17.20	-----	-----	16.58	-----	19.37	21.40
20	20.78	20.52	17.41	18.71	18.98	17.73	-----	-----	-----	-----	19.93	-----
25	20.75	20.67	17.48	-----	-----	18.09	-----	-----	-----	18.07	20.31	-----
Eom	20.36	20.68	17.50	19.30	-----	18.13	-----	-----	-----	18.44	20.54	-----
WTR YEAR	1981	MAX	16.43	DEC 15, 1980	MIN	21.40	SEP 15, 1981					

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1981-82

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	16.98	16.49	18.02	-----	-----	-----	-----	-----	-----	13.32	18.50
10	-----	17.68	16.68	18.37	-----	-----	-----	-----	-----	15.40	15.84	-----
15	-----	17.63	16.86	-----	-----	-----	-----	-----	-----	-----	16.56	-----
20	19.25	17.84	-----	18.16	-----	-----	11.40	15.84	-----	13.82	17.31	-----
25	19.56	17.77	17.50	18.46	-----	-----	12.29	15.10	-----	-----	17.88	14.77
Eom	19.95	17.63	17.71	-----	-----	-----	-----	-----	15.38	15.31	18.14	15.51
WTR YEAR	1982	MAX	11.40	APR 20, 1982	MIN	19.95	OCT 31, 1981					

GROUND-WATER LEVELS

WASHINGTON COUNTY

412037N091564701. Local number, 76-9-31 CBBC1.--Continued.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1982-83

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	15.93	16.90	9.77	14.23	16.94	14.95	-----	-----	16.56	17.77	20.43	23.63
10	15.55	17.08	11.64	14.24	-----	14.91	-----	-----	17.05	18.31	20.53	23.68
15	16.01	14.52	13.29	15.40	-----	15.21	10.99	15.18	17.34	18.87	20.98	23.97
20	16.44	14.74	14.11	15.84	-----	15.72	-----	15.00	17.62	19.54	21.40	18.95
25	16.88	15.51	14.53	15.10	14.59	16.18	-----	15.70	17.93	20.09	21.72	20.40
Eom	17.01	14.39	13.68	16.65	14.81	-----	-----	16.01	17.38	20.19	23.23	20.51
WTR YEAR	1983	MAX	9.77	DEC	5, 1982	MIN	23.97	SEP	15, 1983			

412754N091494701. Local number, 77-9-24 AADA1.
 LOCATION.--Lat 41°27'54", long 91°49'47", Hydrologic Unit 07080209, north of the city sewage treatment plant and west of First Avenue SE, Wellman.
 Owner: City of Wellman.
 AQUIFER.--Dolomite of Mississippian Age and Dolomite of Devonian Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in, depth 110 ft, cased to 47 ft, open end.
 DATUM.--Altitude of land-surface datum is 695 ft. Measuring point; Top of casing 1.35 ft above land-surface datum.
 REMARKS.--City test well No. 1. Water levels, from May 1963 to October 1965 from recorder graph, from November 1965 to current year from steel tape measurements, in ft, below land-surface datum.
 PERIOD OF RECORD.--May 1963 to October 1971, May 1973 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.35 ft above land-surface datum, Nov. 3, 1977, Mar. 28, 1979, and Apr. 13, 1983; lowest 6.80 ft below land-surface datum, Oct. 20, 1964.

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1962-63

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5									4.80	-----	4.56	-----
10								4.79	4.74	5.35	4.08	5.29
15								3.34	-----	5.25	4.66	5.36
20								-----	5.25	4.13	-----	5.30
25								4.64	5.39	4.76	4.94	5.25
Eom								4.70	-----	4.36	5.16	5.50
WTR YEAR	1963	MAX	3.34	MAY	15, 1963	MIN	5.50	SEP	30, 1963			

Water level, in feet, at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1963-64

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	5.82	5.18	4.83	-----	4.52	3.02	2.55	-----	-----	-----	6.26
10	5.64	5.94	5.37	-----	-----	-----	2.96	-----	-----	-----	-----	6.41
15	-----	5.92	5.19	-----	-----	3.82	3.31	-----	-----	-----	-----	6.50
20	5.73	5.50	5.34	-----	-----	-----	1.88	-----	-----	-----	5.89	6.32
25	5.75	5.11	5.24	-----	4.86	-----	2.62	-----	-----	-----	5.92	6.42
Eom	-----	5.27	4.79	-----	4.77	3.35	2.60	-----	-----	-----	6.18	6.53
WTR YEAR	1964	MAX	1.88	APR	20, 1964	MIN	6.53	SEP	30, 1964			

Water level at noon, below land-surface datum, from recorder graph, water year October 1 to September 30 1964-65

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	6.56	-----	-----	5.94	-----	-----	-----	-----	2.45	2.58	-----	-----
10	6.66	-----	6.47	6.02	-----	-----	-----	-----	2.58	-----	-----	-----
15	6.75	6.35	6.30	6.07	5.85	4.72	-----	-----	3.91	-----	-----	-----
20	6.80	6.32	6.46	6.11	5.74	4.80	-----	4.10	4.23	-----	-----	-----
25	-----	-----	6.49	-----	-----	5.07	-----	3.62	4.59	-----	-----	-----
Eom	-----	-----	6.51	-----	-----	4.85	-----	3.84	3.96	-----	-----	-----
WTR YEAR	1965	MAX	2.45	JUN	5, 1965	MIN	6.80	OCT	20, 1964			

Nov. 29, 1965	3.73	Jan. 6, 1966	2.83	May 18, 1966	0.01	June 22, 1966	2.59
Dec. 2	3.64						
Jan. 11, 1967	6.19	Feb. 7, 1967	6.01	May 17, 1967	4.18	Sept. 22, 1967	6.35
Dec. 18, 1967	5.07	Apr. 12, 1968	5.23	Aug. 9, 1968	5.94	Sept. 20, 1968	6.20
Feb. 6, 1968	5.20	June 6	5.48				
Nov. 14, 1968	6.48	Feb. 6, 1969	5.77	Apr. 11, 1969	4.45	June 4, 1969	5.28

GROUND-WATER LEVELS

WASHINGTON COUNTY

412754N091494701. Local number, 77-9-24 AADA1.--Continued.

Oct. 9, 1969	5.54	Apr. 9, 1970	4.15		
Feb. 12, 1971	5.43	June 8, 1971	5.45		
Oct. 28, 1971	6.25				
May 15, 1973	2.48				
Mar. 12, 1974	0.68	July 9, 1974	0.69		
Oct. 15, 1974	2.55	Mar. 29, 1975	+0.08	Sept. 3, 1975	3.12
Mar. 17, 1976	1.15	June 8, 1976	0.78		
Nov. 2, 1976	4.03	Feb. 15, 1977	4.35	June 1, 1977	3.15
Nov. 3, 1977	+1.35	Mar. 15, 1978	0.63	June 7, 1978	0.61
Mar. 28, 1979	+1.35	June 27, 1979	1.43	Aug. 29, 1979	1.54
Jan. 18, 1980	1.25	May 14, 1980	1.67	Aug. 7, 1980	2.70
Apr. 15	0.27	June 10	1.62	Sept. 3, 1980	1.84
Oct. 8, 1980	1.65	Jan. 7, 1981	1.52	Apr. 9, 1981	1.54
Nov. 6	1.67	Feb. 13	1.51	May 6	0.57
Dec. 10	0.28	Mar. 12	0.90	June 4	1.82
Oct. 19, 1981	0.69	Jan. 19, 1982	0.56	Apr. 15, 1982	+0.55
Nov. 16	0.65	Feb. 18	1.19	May 17	0.38
Dec. 16	0.56	Mar. 16	+0.59	June 22	+0.18
Oct. 18, 1982	2.07	Jan. 3, 1983	0.54	Apr. 13, 1983	+1.35
Nov. 17	1.12	Feb. 22	0.06	May 11	0.56
Dec. 1	0.85	Mar. 15	0.56	June 9	1.42
				July 11, 1983	2.11
				Aug. 3	3.57
				Sept. 1	4.55

WEBSTER COUNTY

421550N094041001. Local number, 86-28-14 ADAB1.

LOCATION.--Lat 42°15'50", long 94°04'10", Hydrologic Unit 07100004, in the town water plant, next to the water tower, Dayton,
 Owner: Town of Dayton.

AQUIFER.--Limestone of Devonian Age and Limestone of Mississippian Age.

WELL CHARACTERISTICS.--Drilled municipal artesian well, diameter 13 to 10 in, depth 1,240 ft, cased to 505 ft, 8 in liner 770 to 966 ft, open end.

DATUM.--Altitude of land-surface datum is 1,121 ft. Measuring point; Pump base 1.30 ft above land-surface datum.

REMARKS.--Town well No. 2. Water levels affected by pumping. Water levels, in ft, below land-surface datum from steel tape or airline measurements. 1942 to 1948 and 1952 to 1955 records published in Geological Survey Water Supply Papers.

PERIOD OF RECORD.--September 1942 to December 1948, January 1952 to November 1971, March 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 69.93 ft below land-surface datum, Nov. 17, 1942; lowest 144.70 ft below land-surface datum, Aug. 24, 1983.

GROUND-WATER LEVELS

WEBSTER COUNTY

421550N094041001. Local number, 86-28-14 ADAB1.--Continued.

Feb. 22, 1956	97.87					
May 22, 1957	95.34	Aug. 29, 1957	100.88			
Dec. 5, 1957	102.16	Mar. 11, 1958	98.41			
Dec. 10, 1958	104.97	Mar. 4, 1959	103.97	Aug. 27, 1959	105.11	
Dec. 6, 1960	105.57	Aug. 18, 1961	109.64			
Apr. 12, 1962	105.66	Sept. 21, 1962	110.49			
Dec. 6, 1962	106.24	May 23, 1963	111.61			
Dec. 12, 1963	110.46	Feb. 5, 1964	109.83	Aug. 20, 1964	101.02	
Aug. 6, 1965	103.14					
June 7, 1966	99.70	Sept. 30, 1966	103.70			
Mar. 13, 1967	105.70					
Dec. 14, 1967	108.70	Mar. 7, 1968	106.70	July 24, 1968	113.70	
Mar. 14, 1969	108.70	Sept. 12, 1969	113.70			
Apr. 8, 1970	108.70					
Nov. 22, 1971	118.70					
Mar. 13, 1974	118.70					
Feb. 19, 1975	123.70					
Apr. 1, 1976	138.70					
Feb. 22, 1977	138.70	May 24, 1977	138.70	Aug. 8, 1977	130.70	
Nov. 18, 1977	139.70	Feb. 21, 1978	128.70	May 17, 1978	143.70	
Nov. 6, 1978	133.70	Feb. 20, 1979	129.70	May 21, 1979	129.70	
Nov. 20, 1979	140.70	Feb. 21, 1980	129.70	June 10, 1980	131.70	
Feb. 20, 1981	131.70	May 5, 1981	138.70	July 30, 1981	130.70	
Dec. 3, 1981	138.70	Feb. 18, 1982	136.70	May 13, 1982	132.70	
Nov. 29, 1982	138.70	Feb. 4, 1983	136.70	May 31, 1983	136.70	
					Aug. 24, 1983	144.70

421837N094083601. Local number, 87-28-29 CCCD1.

LOCATION.--Lat 42°18'37", long 94°08'36", Hydrologic Unit 07100006, 3 mi north and 2 mi east of the Town of Hancock.

Owner: Ransom Helms.

AQUIFER.--Glacial Drift of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in, depth 42 ft, lined with tile.

DATUM.--Altitude of land-surface datum is 1,165 ft. Measuring point; Top of casing 0.75 ft above land-surface datum.

REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements.

PERIOD OF RECORD.--October 1942 to June 1956, March 1958 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.05 ft below land-surface datum, Aug. 1, 1972; lowest 13.62 ft below land-surface datum, Mar. 12, 1956.

Oct. 20, 1982	1.55	Jan. 21, 1983	3.87	Apr. 21, 1983	1.88	July 21, 1983	4.44
Nov. 19	2.87	Feb. 23	2.21	May 23	2.78	Aug. 19	4.90
Dec. 20	2.03	Mar. 22	2.37	June 20	3.49	Sept. 21	3.60

GROUND-WATER LEVELS

WEBSTER COUNTY

423018N094214701. Local number, 89-30-23 CC8B1.

LOCATION.--Lat 42°30'18", long 94°21'47", Hydrologic Unit 07100004, 75 ft west of the new school addition, Barnum.

Owner: Johnson Township Consolidated School.

AQUIFER.--Sandstone of Cretaceous Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in, reported depth 203 ft, cased to 208 ft, perforated 203-208 ft.

DATUM.--Altitude of land-surface datum is 1,174 ft. Measuring point; Top of casing at land-surface datum.

REMARKS.--Water levels, in ft, below land-surface datum from steel tape measurements. Site identification number corrected 1983.

PERIOD OF RECORD.--October 1942 to September 1945, May 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.86 ft below land-surface datum, Jul. 2, 1945; lowest 52.60 ft below land-surface datum, Feb. 26, 1980.

Nov. 1, 1982	45.17	Feb. 1, 1983	45.76	Apr. 28, 1983	45.38	Aug. 16, 1983	45.00
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WOODBURY COUNTY

422058N09557301. Local number, 87-44-15 C88B1.

LOCATION.--Lat 42°20'58", long 95°57'37", Hydrologic Unit 10230003, approximately 3.5 mi west and 5.5 mi north of the Village of Oto.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 197 ft, cased to 197 ft, perforated 185 to 189 ft.

DATUM.--Altitude of land-surface datum is 1,165 ft. Measuring point; Top of casing 1.50 ft above land-surface datum.

REMARKS.--Well D-34. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 56.05 ft below land-surface datum, Sep. 7, 1983; lowest 63.56 ft below land-surface datum, Nov. 2, 1982.

Apr. 8, 1980	60.20	June 4, 1980	60.36	Aug. 7, 1980	60.73	Sept. 9, 1980	61.18
May 5	60.26	July 9	60.50				
Dec. 11, 1980	62.00						
May 7, 1982	63.32	June 29, 1982	63.50				
Nov. 2, 1982	63.56	Mar. 23, 1983	61.65	June 15, 1983	59.59	Sept. 7, 1983	56.05

422830N096000511. Local number, 88-44-6 BAAB11.

LOCATION.--Lat 42°28'30", long 96°00'05", Hydrologic Unit 10230004, approximately 3 mi east and .5 mi south of the Town of Moville.

Owner: Iowa Geological Survey and U.S. Geological Survey.

AQUIFER.--Dakota Sandstone of Early Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 337 ft, cased to 337 ft, perforated 332 to 337 ft.

DATUM.--Altitude of land-surface datum is 1,340 ft. Measuring point; Top of casing 3.50 ft above land-surface datum.

REMARKS.--Well D-33. Water levels, in ft, below land-surface datum from steel tape or electric line measurements.

PERIOD OF RECORD.--October 1979 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 200.77 ft below land-surface datum, Sep. 7, 1983; lowest 202.90 ft below land-surface datum, Oct. 17, 1979.

Oct. 17, 1979	202.90	Mar. 5, 1980	201.50	June 4, 1980	201.23	Sept. 9, 1980	201.72
Oct. 30	201.40	Apr. 8	201.25	July 9	201.23		
Dec. 12	201.10	May 5	201.17	Aug. 7	201.36		
Dec. 11, 1980	202.05						
May 7, 1982	202.05	June 29, 1982	202.22				
Nov. 2, 1982	202.32	Mar. 23, 1983	202.03	June 13, 1983	200.99	Sept. 7, 1983	200.77

GROUND-WATER LEVELS

WOODBURY COUNTY

423015N096034601. Local number, 89-44-20 DCDC1.
 LOCATION.--Lat 42°30'15", long 96°03'46", Hydrologic Unit 10230004, east of Iowa Highway 140,
 approximately 1 mi north of the Town of Merville.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 221 ft, cased to 221 ft,
 perforated 206 to 221 ft.
 DATUM.--Altitude of land-surface datum is 1,160 ft. Measuring point; Top of casing 4.00 ft above land-
 surface datum.
 REMARKS.--Well D-32. Water levels, in ft, below land-surface datum from steel tape or electric line
 measurements.
 PERIOD OF RECORD.--October 1979 to December 1980, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.43 ft below land-surface datum, May 2, 1983;
 lowest 26.65 ft below land-surface datum, Dec. 11, 1980.

Oct. 16, 1979	26.00	Mar. 6, 1980	23.90	June 4, 1980	25.48	Sept. 9, 1980	26.21
Oct. 30	25.85	Apr. 8	25.50	July 9	25.86		
Dec. 12	25.30	May 5	25.72	Aug. 6	26.18		

Dec. 11, 1980	26.65						

May 7, 1982	26.52	June 29, 1982	26.57				

Nov. 2, 1982	26.63	May 2, 1983	23.43	July 25, 1983	23.70		

422910N096135811. Local number, 89-46-36 BBDC11.
 LOCATION.--Lat 42°29'10", long 96°13'58", Hydrologic Unit 10230004, approximately .75 mi northeast of
 the Eberly Cemetary or 2.5 mi west and .75 mi north of the Village of Lawton.
 Owner: Iowa Geological Survey and U.S. Geological Survey.
 AQUIFER.--Dakota Sandstone of Early Cretaceous Age.
 WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in, depth 500 ft, cased to 500 ft,
 perforated 358 to 362 ft.
 DATUM.--Altitude of land-surface datum is 1,268 ft. Measuring point; Top of casing 3.00 ft above land-
 surface datum.
 REMARKS.--Well D-30. Water levels, in ft, below land-surface datum from steel tape or electric line
 measurements.
 PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 130.54 ft below land-surface datum, Jul. 25, 1983;
 lowest 135.35 ft below land-surface datum, Nov. 2, 1982.

Apr. 8, 1980	133.12	June 4, 1980	133.45	Aug. 7, 1980	134.36	Sept. 9, 1980	134.31
May 5	130.80	July 9	133.55				

Dec. 11, 1980	134.50						

May 7, 1982	135.19	June 29, 1982	135.17				

Nov. 2, 1982	135.35	May 2, 1983	131.27	July 25, 1983	130.54		

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
ADAIR					
411950094361201	07533W13CCCB	1975	FONTANELLE NO 5	83-03-21	110QRNR 38 65
412852094275101	07731W07CAAB	1977	MENLO TOWN NO 3	82-04-19	111ALVM 24 12
411246094402401	07533W32CDBB	1943	BRIDGEWATER NO 2	83-03-22	111HLCN 45 35

ADAMS					
405631094560801	07135W20AACA	1968	NODAWAY NO 1	83-03-21	112PLSC 36 45
410115094362201	07233W23DBAA	1981	PRESCOTT NO 2	83-03-21	112PLSC 40 95

AUDUBON					
413743095041201	07936W29BBCA	1977	KIMBALLTON NO 3	82-09-13	111ALVM 41 --

BENTON					
421016092020201	08510W17D8D	07414	VINTON NO 3	82-11-02	112PLSC 120 600
415423091552701	08209W17CCDD	23332	NORWAY NO 3	82-11-02	350SLRN 585 100
415950091574301	08310W13CAC	01126	NEWHALL CITY 1	82-11-23	350SLRN 473 30
421327091520901	08609W35BBBD	1980	URBANA NO 3	82-11-23	350SLRN 560 25
415944091573501	08310W13CDA	08596	NEWHALL CITY 2	82-11-23	355NIGR 478 80
415957091513601	08309W14DBB	00973	ATKINS TOWN NO 1	82-11-02	358KNKK 452 65
421011092012101	08510W16CDBB	00025	VINTON NO 2	82-11-02	371JRDN 1510 400

BLACK HAWK					
423103092212701	08913W15DAAC		WATERLOO NO 7	82-05-11	111ALVM 80 2400
422801092152801	08812W04BBBC	12372	ELK RUN HEIGHTS 1	82-01-24	344CDVL 125 350
423139092261401	08914W12DDCD		CEDAR FALLS 2	82-02-24	344CDVL 105 2400
422805092165901	08812W06ACAA	10039 1958	EVANSDALE NO 3	82-02-24	344WPPC 140 400

BREMER					
425058092315601	09314W20CC	11138	PLAINFIELD 1	82-02-24	344DVNNM 150 125
424224092133901	09112W11DBB	11991 1960	READLYN 2	82-02-25	350SLRN 154 200
424319092283401	09114W03DA		WAVERLY 5	82-02-24	350SLRN 157 1500

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM SOLVED AS (MG/L) (00915)	MAGNESIUM, DIS-SOLVED (MG/L) (00925)	SODIUM, DIS-SOLVED (MG/L) (00930)	POTASSIUM, DIS-SOLVED (MG/L) (00935)	ALKALINITY LAB AS (MG/L CaCO3) (90410)	CHLORIDE, DIS-SOLVED AS (MG/L) (00940)
ADAIR												
83-03-21	600	450	6.5	10.0	9831	210	61	14	11	2.9	212	6.5
82-04-19	270	467	6.9	10.0	2000	210	66	10	15	--	173	13
83-03-22	360	285	6.8	10.0	9831	120	31	9.2	10	.6	57	11
ADAMS												
83-03-21	2700	470	7.5	11.0	9831	220	58	18	8.5	1.2	128	16
83-03-21	240	700	6.4	10.5	9831	280	79	21	29	3.5	150	48
AUDUBON												
82-09-13	--	785	6.9	11.5	2000	370	110	26	20	4.0	240	78
BENTON												
82-11-02	180	500	7.7	10.5	9831	240	66	18	7.7	1.2	236	1.0
82-11-02	30	1800	7.5	13.0	9831	630	140	68	190	8.0	251	6.0
82-11-23	30	910	7.4	11.0	9831	360	79	40	58	12	304	1.5
82-11-23	30	545	7.6	10.0	9831	230	51	24	26	6.0	243	3.0
82-11-23	30	955	7.3	11.0	9831	370	82	39	57	12	311	1.5
82-11-02	30	765	7.3	12.5	9831	278	62	26	63	7.1	392	1.0
82-11-02	30	870	7.6	12.5	9831	310	69	34	67	20	296	5.0
BLACK HAWK												
82-05-11	180	540	7.5	12.0	9831	250	67	21	9.0	.7	203	14
82-01-24	30	530	7.4	12.0	9831	270	73	21	14	3.8	185	24
82-02-24	30	490	7.5	11.0	9831	270	73	21	5.2	1.9	195	11
82-02-24	50	570	7.4	11.0	9831	300	86	21	15	2.8	221	29
BREMER												
82-02-24	60	475	7.6	10.5	9831	250	72	17	8.0	2.2	180	14
82-02-25	--	550	7.3	10.0	9831	290	78	23	17	3.6	316	1.0
82-02-24	30	590	7.4	11.0	9831	300	81	23	8.9	1.8	230	18

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L AS N) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
ADAIR												
83-03-21	24	.20	35	280	<.02	<10	300	<1	<10	<10	17000	<10
82-04-19	35	.23	--	270	1.7	<5	160	<2	<5	<10	<50	<50
83-03-22	32	.20	29	199	9.0	<10	200	<1	<10	<10	<10	<10
ADAMS												
83-03-21	86	.20	19	304	.47	<10	200	<1	<10	10	400	<10
83-03-21	150	.20	38	509	<.02	<10	300	<1	<10	<10	24000	<10
AUDUBON												
82-09-13	54	.26	12	520	<.04	<50	490	<2	<5	<10	13200	<50
BENTON												
82-11-02	24	.30	18	255	<.02	<10	100	<1	<10	10	1400	<10
82-11-02	800	1.7	8.2	1420	<.02	<10	<100	<1	<10	<30	830	<10
82-11-23	200	1.3	6.8	543	<.02	<10	<100	<1	<10	<10	580	<10
82-11-23	34	.70	7.0	247	<.02	<10	<100	<1	<10	<10	20	<10
82-11-23	190	1.3	7.0	527	<.02	<10	<100	<1	<10	<10	1200	<10
82-11-02	28	.40	11	385	<.02	<10	500	<1	<10	<10	260	<10
82-11-02	160	1.1	7.4	520	<.02	<10	<100	<1	<10	<10	320	<10
BLACK HAWK												
82-05-11	29	.20	7.2	306	3.4	<10	200	<1	<10	<10	<10	<10
82-01-24	49	.10	19	506	3.8	<10	100	<1	<10	<10	20	<10
82-02-24	27	.20	16	277	5.2	<10	100	<1	<10	<10	<10	<10
82-02-24	74	.40	14	377	.18	<10	<100	<1	<10	<10	1100	<10
BREMER												
82-02-24	28	.10	14	241	5.9	<10	<100	<1	<10	<10	<10	<10
82-02-25	9.4	.40	16	305	.14	<10	300	<1	<10	<10	1800	<10
82-02-24	22	.20	15	316	5.2	<10	<100	<1	<10	<10	<10	<10

DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)
ADAIR										
83-03-21	720	<1.0	<10	<10	10	1.3	3.0	--	--	22
82-04-19	280	--	<5	<5	30	.3	1.0	--	--	--
83-03-22	<10	<1.0	<10	<10	10	<.1	3.0	--	--	39
ADAMS										
83-03-21	60	<1.0	<10	<10	70	1.5	9.0	--	--	36
83-03-21	3100	<1.0	<10	<10	20	.9	3.0	--	--	<10
AUDUBON										
82-09-13	1800	.2	<50	<5	<20	<.2	<.4	--	--	--
BENTON										
82-11-02	130	<1.0	<10	<10	<10	1.2	1.0	--	--	--
82-11-02	<10	<1.0	<10	<10	70	18	18	4.5	2.2	--
82-11-23	<10	<1.0	<10	<10	20	5.0	13	3.3	<.50	<10
82-11-23	<10	<1.0	<10	<10	<10	1.4	6.0	--	--	<10
82-11-23	<10	<1.0	<10	<10	<10	4.2	14	2.3	.50	<10
82-11-02	50	<1.0	<10	<10	<10	5.1	16	4.8	1.8	--
82-11-02	<10	<1.0	<10	<10	<10	3.0	16	3.0	2.2	--
BLACK HAWK										
82-05-11	<10	<1.0	<10	<10	<10	<.1	<.5	--	--	17
82-01-24	<10	<10	<10	<10	<10	.6	2.0	--	--	10
82-02-24	<10	<1.0	<10	<10	<10	1.4	2.0	--	--	13
82-02-24	30	<1.0	<10	<10	<10	.3	2.0	--	--	<10
BREMER										
82-02-24	<10	<1.0	<10	<10	<10	.3	2.0	--	--	<10
82-02-25	10	<1.0	<10	<10	<10	.3	5.0	--	--	<10
82-02-24	<10	<1.0	<10	<10	<10	1.4	5.0	--	--	<10

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
BUCHANAN					
422810092035201	08910W31DDCA 1976	JESUP NO 3	83-09-06	340DVSL 400	400
423807092032601	09010W058CDD 1977	FAIRBANK NO 4	83-09-06	344CDVL 197	90
422852092040101	08910W31AAB 09382	JESUP NO 2	83-09-06	358KNKK 380	320
423600091381501	09007W23ABB 05557	LAMONT	82-05-12	358KNKK 160	82

BUENA VISTA					
423840095134601	09037W048BCC 1935	STORM LAKE NO 1	82-07-13	110QRNR 110	525
424706094570901	09235W148CCC 1937	ALBERT CITY WELL NO 1	83-01-10	110QRNR 189	150
425144094590401	09335W218ADC 1959	MARATHON TOWN NO 3	82-12-10	110QRNR 170	85
425336095144201	09337W088BAD 1948	LINN GROVE TOWN NO 1	82-12-09	110QRNR 28	35
425336095144202	09337W088BAD 1948	LINN GROVE TOWN NO 2	82-07-13	110QRNR 35	150
425344095090401	09337W01DDDD 1977	SIOUX RAPIDS NO 2	82-07-13	110QRNR 40	240
425345095090401	09337W01DDDA 1898	SIOUX RAPIDS NO 1	82-12-09	110QRNR 28	250
423619095000701	09035W17DCC 05761	NEWELL TOWN NO 3	83-01-19	112PLSC 299	120
424019095174601	09138W26ACA 14165	ALTA NO 4	83-01-13	210CRCS 530	368
424027095180903	09138W26ACA 1950	ALTA TOWN NO 3	83-01-13	217DKOT 508	350
424330095111001	09137W02CBA 08104	TRUESDALE NO 1	83-01-10	217DKOT 442	40
424935095095301	09337W36CABC 1938	REMBRANDT TOWN WELL	83-01-10	217DKOT 439	35

BUTLER					
423512092521001	09017W29AAAA 1962	APLINGTON TOWN 2	83-07-19	341LMCK 108	120
423412092371701	09015W33ABBB 1914	NEW HARTFORD TOWN NO 1	83-07-19	344CDVL 200	70
423437092471001	09016W30C8D 07043	PARKERSBURG TOWN 2	83-07-19	344CDVL 300	250
424239092350002	09115W11ACBB 1958	SHELL ROCK TOWN NO 2	83-07-20	344CDVL 160	200
425330092483701	09317W01DDDA 03522	GREENE TOWN NO 2	82-03-24	344CDVL 120	210
423401092373601	09015W33BCA 07854	NEW HARTFORD TOWN NO 2	83-07-19	344CLVL 165	125
424524092474802	09217W25ABDA 1931	ALLISON TOWN NO 2	83-07-20	350SLRN 283	220

CALHOUN					
422527094511901	08834W19BDAA 0201B	LYTTON NO 2	83-01-18	3600VCB 1850	300

CARROLL					
420024094575901	08335W18BAAD 1936	HALBUR NO 1	82-04-20	111ALVM 23	12

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
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BUCHANAN												
83-09-06	15	450	7.5	12.0	9831	240	62	21	3.0	1.7	255	.5
83-09-06	60	495	7.4	11.2	9831	250	73	20	5.5	3.4	264	<.5
83-09-06	20	480	7.5	12.5	9831	260	66	23	5.0	2.3	250	2.5
82-08-12	30	500	7.5	13.0	9831	250	67	19	8.6	.6	214	16

BUENA VISTA												
82-07-13	20	1050	7.5	13.0	9831	520	140	42	27	4.8	288	7.0
83-01-10	15	1380	7.2	10.0	9831	640	170	52	73	8.7	393	<.5
82-12-10	10	--	7.2	10.0	9831	530	140	43	44	5.0	388	.5
82-12-09	10	--	7.5	12.0	9831	460	120	40	16	3.4	350	32
82-07-13	20	1010	7.1	11.5	9831	310	58	40	18	4.7	202	38
82-07-13	20	880	7.4	12.0	9831	440	120	33	13	3.0	296	22
82-12-09	10	970	7.1	12.0	9831	510	140	38	13	3.4	319	29
83-01-19	15	--	7.3	11.0	9831	670	170	60	130	8.9	322	4.5
83-01-13	240	1600	7.0	12.0	9831	800	210	68	70	8.4	367	1.5
83-01-13	10	--	7.0	12.0	9831	800	210	68	73	9.3	364	1.5
83-01-10	20	1320	7.3	11.0	9831	680	180	57	49	6.3	406	<.5
83-01-10	20	1840	7.2	10.0	9831	960	260	76	87	7.2	350	1.0

BUTLER												
83-07-19	30	669	7.2	12.0	9831	280	66	29	32	4.8	291	2.0
83-07-19	20	380	7.0	13.0	9831	240	63	20	4.8	1.9	241	3.5
83-07-19	30	405	7.0	12.0	9831	220	59	18	5.5	1.8	220	1.5
83-07-20	90	460	7.3	11.0	9831	240	66	18	3.9	2.3	202	7.5
82-03-24	30	430	7.8	10.0	9831	230	67	15	1.1	<.1	212	1.0
83-07-19	20	410	7.4	13.0	9831	230	61	19	7.4	2.8	202	18
83-07-20	30	--	7.4	11.0	9831	230	61	20	7.5	3.9	222	1.5

CALHOUN												
83-01-18	180	1300	7.1	14.0	9831	580	160	45	97	14	320	6.5

CARROLL												
82-04-20	15	923	7.4	10.0	2000	470	130	36	21	<2.0	249	50

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
BUCHANAN												
83-09-06	6.3	.40	10	223	.02	<10	400	<1	<10	<10	160	<10
83-09-06	16	.70	8.0	276	<.02	<10	<100	<1	<10	<10	240	<10
83-09-06	20	.70	10	263	2.0	<10	200	<1	<10	<10	<10	<10
82-05-12	30	.20	5.4	294	<.02	<10	<100	<1	<10	<10	1400	<10
BUENA VISTA												
82-07-13	210	.30	31	738	.11	<10	<100	<1	<10	<10	2700	<10
83-01-10	400	.25	32	984	.11	10	<100	<1	<10	<10	4900	<10
82-12-10	210	.30	25	748	<.02	<10	<100	<1	<10	10	2100	<10
82-12-09	94	.40	23	576	3.8	<10	100	<1	<10	<10	150	<10
82-07-13	100	.30	27	629	.14	<10	200	<1	<10	<10	600	<10
82-07-13	98	.30	25	512	7.5	<10	100	<1	<10	<10	<10	<10
82-12-09	110	.30	22	636	15	20	<100	<1	<10	<10	<10	<10
83-01-19	580	.30	22	1250	.18	<10	<100	<1	<10	20	2900	<10
83-01-13	550	.60	30	1210	.05	<10	<100	<1	<10	10	110	<10
83-01-13	560	.70	21	1200	.07	<10	<100	<1	<10	20	2200	<10
83-01-10	370	.30	29	949	.11	<10	100	<1	<10	<10	5400	<10
83-01-10	760	.50	22	1470	.09	<10	100	<1	<10	10	3200	<10
BUTLER												
83-07-19	70	.40	14	349	<.02	<10	<100	<1	<10	<10	410	<10
83-07-19	8.2	.70	16	238	<.02	<10	<100	<1	<10	<10	990	<10
83-07-19	15	.70	9.2	224	<.02	<10	<100	<1	<10	<10	380	<10
83-07-20	25	.30	13	249	2.5	<10	200	<1	<10	<10	<10	<10
82-03-24	18	.30	13	258	.11	<10	200	<1	<10	<10	170	<10
83-07-19	19	.65	9.3	239	<.02	<10	<100	<1	<10	<10	460	<10
83-07-20	9.2	.50	12	202	<.02	<10	200	2	<10	<10	390	<10
CALHOUN												
83-01-18	420	.40	8.1	959	.02	<10	<100	<1	<10	<10	5200	<10
CARROLL												
82-04-20	120	.31	9.6	612	8.6	<5	190	<2	<5	<10	61	<50
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
BUCHANAN												
83-09-06	300	<1.0	<10	<10	<10	<10	1.8	3.0	--	--	--	--
83-09-06	<10	<1.0	<10	<10	<10	10	.9	1.0	--	--	--	--
83-09-06	<10	<1.0	<10	<10	<10	<10	2.4	<.3	--	--	--	--
82-05-12	100	<1.0	<10	<10	<10	40	1.5	1.0	--	--	17	--
BUENA VISTA												
82-07-13	210	<1.0	<10	<10	<10	<10	<.1	1.0	--	--	<10	<10
83-01-10	140	<1.0	<10	<10	<10	10	<.1	8.0	--	--	<10	<10
82-12-10	460	<1.0	<10	<10	<10	<10	1.9	5.0	--	--	15	<10
82-12-09	910	<1.0	<10	<10	<10	30	1.7	5.0	--	--	30	<10
82-07-13	1100	<1.0	<10	<10	<10	40	3.7	1.0	.2	.60	15	<10
82-07-13	10	<1.0	<10	<10	<10	20	2.7	5.0	<.1	<.40	24	<10
82-12-09	30	<1.0	<10	<10	<10	10	3.1	2.0	<.2	1.1	<10	<10
83-01-19	50	<1.0	<10	<10	<10	20	<.1	12	--	--	10	<10
83-01-13	870	<1.0	<10	<10	<10	10	8.7	16	3.8	.50	<10	<10
83-01-13	610	<1.0	<10	<10	<10	30	1.6	5.0	--	--	<10	<10
83-01-10	190	<1.0	<10	<10	<10	30	6.2	2.0	3.1	1.4	20	<10
83-01-10	610	<1.0	<10	<10	<10	20	4.2	14	2.3	2.4	<10	<10
BUTLER												
83-07-19	<10	<1.0	<10	<10	<10	<10	2.2	2.0	--	--	--	--
83-07-19	60	<1.0	<10	<10	<10	<10	1.5	<.3	--	--	--	--
83-07-19	20	<1.0	<10	<10	<10	<10	1.2	<.3	--	--	--	--
83-07-20	<10	<1.0	<10	<10	<10	30	.6	2.0	--	--	--	--
82-03-24	<10	<1.0	<10	<10	<10	10	1.2	1.0	--	--	<10	--
83-07-19	90	<1.0	<10	<10	<10	20	<.1	1.0	--	--	--	--
83-07-20	10	<1.0	<10	<10	<10	50	.9	<.3	--	--	--	--
CALHOUN												
83-01-18	80	<1.0	<10	<10	<10	10	3.2	15	2.5	1.5	<10	<10
CARROLL												
82-04-20	100	.1	<5	<5	<5	<20	2.4	2.0	.3	<.50	--	--

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPH) (00058)																																																																																																																																																																																																																																																																																																																																																																																													
CARROLL																																																																																																																																																																																																																																																																																																																																																																																																		
415435094492801	08234W17DDBA 21882 1969 DEDHAM NO 4	82-09-15	111SRV	45	25																																																																																																																																																																																																																																																																																																																																																																																													
415358094400101	08233W23BCCC 1977 COON RAPIDS NO 2	82-03-01	112PLSC	87	400																																																																																																																																																																																																																																																																																																																																																																																													
415808094491801	08334W28CBCC 14182 1961 WILLEY	82-04-19	112PLSC	43	55																																																																																																																																																																																																																																																																																																																																																																																													
420702094404001	08433W03BDAA 26762 1982 IGS & USGS WC #130	82-09-10	320PSLV	135	7.0																																																																																																																																																																																																																																																																																																																																																																																													
CASS																																																																																																																																																																																																																																																																																																																																																																																																		
412857095064901	07737W21CCDD 1968 MARNE NO 4	83-03-24	111HLCN	40	7.0																																																																																																																																																																																																																																																																																																																																																																																													
411501094460601	07534W33CAAC 1977 MASSENA NO 1	83-03-23	112PLSC	40	35																																																																																																																																																																																																																																																																																																																																																																																													
411622094520901	07535W27BBAB 1921 CUMBERLAND NO 1	83-03-23	112PLSC	156	36																																																																																																																																																																																																																																																																																																																																																																																													
411818095045801	07537W10DDBD 1916 LEWIS NO 1	83-03-24	112PLSC	46	100																																																																																																																																																																																																																																																																																																																																																																																													
412400094532001	07635W09BB 01149 1940 WIOTA NO 1	82-08-25	217DKOT	156	--																																																																																																																																																																																																																																																																																																																																																																																													
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<table border="1"> <thead> <tr> <th>DATE OF SAMPLE</th> <th>PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)</th> <th>SPE-CIFIC CONDUCTANCE (UMHOS) (00095)</th> <th>PH (STANDARD UNITS) (00400)</th> <th>TEMPERATURE (DEG C) (00010)</th> <th>AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (0002B)</th> <th>HARDNESS (MG/L AS CaCO3) (00900)</th> <th>CALCIUM SOLVED (MG/L AS Ca) (00915)</th> <th>MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)</th> <th>SODIUM, DIS-SOLVED (MG/L AS Na) (00930)</th> <th>POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)</th> <th>ALKALINITY (MG/L AS CaCO3) (90410)</th> <th>CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;">CARROLL</td> </tr> <tr> <td>82-09-15</td> <td>60</td> <td>705</td> <td>7.2</td> <td>11.5</td> <td>2000</td> <td>360</td> <td>100</td> <td>25</td> <td>16</td> <td>3.0</td> <td>289</td> <td>18</td> </tr> <tr> <td>82-03-01</td> <td>20</td> <td>600</td> <td>7.5</td> <td>11.0</td> <td>2000</td> <td>340</td> <td>90</td> <td>27</td> <td>13</td> <td>--</td> <td>337</td> <td>1.0</td> </tr> <tr> <td>82-04-19</td> <td>270</td> <td>605</td> <td>6.7</td> <td>10.0</td> <td>2000</td> <td>310</td> <td>88</td> <td>23</td> <td>15</td> <td>3.0</td> <td>246</td> <td>2.0</td> </tr> <tr> <td>82-09-10</td> <td>60</td> <td>832</td> <td>--</td> <td>13.0</td> <td>9831</td> <td>380</td> <td>110</td> <td>25</td> <td>49</td> <td>8.2</td> <td>292</td> <td>14</td> </tr> <tr> <td colspan="6" style="text-align: center;">CASS</td> </tr> <tr> <td>83-03-24</td> <td>120</td> <td>810</td> <td>6.8</td> <td>11.0</td> <td>9831</td> <td>390</td> <td>100</td> <td>35</td> <td>14</td> <td>2.6</td> <td>210</td> <td>28</td> </tr> <tr> <td>83-03-23</td> <td>480</td> <td>750</td> <td>6.8</td> <td>11.0</td> <td>9831</td> <td>350</td> <td>96</td> <td>26</td> <td>17</td> <td>2.4</td> <td>205</td> <td>44</td> </tr> <tr> <td>83-03-23</td> <td>480</td> <td>310</td> <td>6.8</td> <td>12.0</td> <td>9831</td> <td>150</td> <td>42</td> <td>11</td> <td>8.2</td> <td>2.1</td> <td>168</td> <td><.5</td> </tr> <tr> <td>83-03-24</td> <td>420</td> <td>685</td> <td>6.8</td> <td>11.0</td> <td>9831</td> <td>290</td> <td>71</td> <td>27</td> <td>11</td> <td>1.9</td> <td>174</td> <td>32</td> </tr> <tr> <td>82-08-25</td> <td>--</td> <td>490</td> <td>6.9</td> <td>14.0</td> <td>9831</td> <td>250</td> <td>71</td> <td>18</td> <td>11</td> <td>.8</td> <td>145</td> <td>20</td> </tr> <tr> <td>82-08-16</td> <td>--</td> <td>--</td> <td>6.8</td> <td>16.0</td> <td>9831</td> <td>300</td> <td>79</td> <td>24</td> <td>12</td> <td>1.6</td> <td>151</td> <td>26</td> </tr> <tr> <td>83-03-22</td> <td>480</td> <td>590</td> <td>7.0</td> <td>10.0</td> <td>9831</td> <td>280</td> <td>78</td> <td>21</td> <td>28</td> <td>3.9</td> <td>260</td> <td>.5</td> </tr> <tr> <td colspan="6" style="text-align: center;">CEDAR</td> </tr> <tr> <td>82-02-17</td> <td>45</td> <td>760</td> <td>7.4</td> <td>12.0</td> <td>9831</td> <td>410</td> <td>93</td> <td>43</td> <td>16</td> <td>.7</td> <td>320</td> <td>20</td> </tr> <tr> <td>83-07-21</td> <td>30</td> <td>920</td> <td>7.2</td> <td>13.5</td> <td>9831</td> <td>470</td> <td>130</td> <td>36</td> <td>17</td> <td>2.4</td> <td>343</td> <td>35</td> </tr> <tr> <td>83-07-21</td> <td>20</td> <td>745</td> <td>7.6</td> <td>13.0</td> <td>9831</td> <td>390</td> <td>100</td> <td>33</td> <td>17</td> <td>2.1</td> <td>360</td> <td>13</td> </tr> <tr> <td colspan="6" style="text-align: center;">CERRO GORDO</td> </tr> <tr> <td>83-02-10</td> <td>10</td> <td>690</td> <td>7.0</td> <td>10.0</td> <td>9831</td> <td>350</td> <td>79</td> <td>37</td> <td>20</td> <td>8.3</td> <td>375</td> <td>3.5</td> </tr> <tr> <td>83-02-10</td> <td>10</td> <td>725</td> <td>7.0</td> <td>10.0</td> <td>9831</td> <td>370</td> <td>72</td> <td>46</td> <td>24</td> <td>11</td> <td>391</td> <td>8.0</td> </tr> <tr> <td>83-02-10</td> <td>1440</td> <td>735</td> <td>7.0</td> <td>12.0</td> <td>9831</td> <td>310</td> <td>81</td> <td>27</td> <td>38</td> <td>10</td> <td>336</td> <td>5.0</td> </tr> <tr> <td colspan="6" style="text-align: center;">CHEROKEE</td> </tr> <tr> <td>82-08-04</td> <td>15</td> <td>1290</td> <td>7.3</td> <td>11.0</td> <td>9831</td> <td>660</td> <td>190</td> <td>46</td> <td>50</td> <td>8.3</td> <td>328</td> <td>3.5</td> </tr> <tr> <td>83-01-12</td> <td>10</td> <td>--</td> <td>7.3</td> <td>11.0</td> <td>9831</td> <td>300</td> <td>84</td> <td>23</td> <td>24</td> <td>4.9</td> <td>280</td> <td>.5</td> </tr> <tr> <td>83-01-12</td> <td>10</td> <td>--</td> <td>7.2</td> <td>11.0</td> <td>9831</td> <td>720</td> <td>200</td> <td>54</td> <td>75</td> <td>9.5</td> <td>288</td> <td>4.0</td> </tr> <tr> <td>83-01-13</td> <td>10</td> <td>540</td> <td>7.2</td> <td>11.0</td> <td>9831</td> <td>290</td> <td>79</td> <td>23</td> <td>24</td> <td>3.3</td> <td>271</td> <td>1.0</td> </tr> <tr> <td>83-01-13</td> <td>10</td> <td>540</td> <td>7.3</td> <td>11.0</td> <td>9831</td> <td>270</td> <td>75</td> <td>21</td> <td>16</td> <td>3.1</td> <td>262</td> <td>.5</td> </tr> <tr> <td>83-01-13</td> <td>10</td> <td>1000</td> <td>7.4</td> <td>11.0</td> <td>9831</td> <td>470</td> <td>130</td> <td>36</td> <td>47</td> <td>6.5</td> <td>290</td> <td>1.5</td> </tr> <tr> <td>83-01-13</td> <td>10</td> <td>--</td> <td>7.4</td> <td>11.0</td> <td>9831</td> <td>370</td> <td>100</td> <td>28</td> <td>39</td> <td>6.0</td> <td>290</td> <td>1.5</td> </tr> <tr> <td>83-01-12</td> <td>15</td> <td>--</td> <td>7.4</td> <td>12.0</td> <td>9831</td> <td>540</td> <td>140</td> <td>47</td> <td>110</td> <td>10</td> <td>317</td> <td>8.0</td> </tr> <tr> <td>83-01-12</td> <td>15</td> <td>1900</td> <td>7.4</td> <td>14.0</td> <td>9831</td> <td>930</td> <td>250</td> <td>74</td> <td>100</td> <td>14</td> <td>316</td> <td>6.5</td> </tr> </tbody> </table>						DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (0002B)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CaCO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)	CARROLL						82-09-15	60	705	7.2	11.5	2000	360	100	25	16	3.0	289	18	82-03-01	20	600	7.5	11.0	2000	340	90	27	13	--	337	1.0	82-04-19	270	605	6.7	10.0	2000	310	88	23	15	3.0	246	2.0	82-09-10	60	832	--	13.0	9831	380	110	25	49	8.2	292	14	CASS						83-03-24	120	810	6.8	11.0	9831	390	100	35	14	2.6	210	28	83-03-23	480	750	6.8	11.0	9831	350	96	26	17	2.4	205	44	83-03-23	480	310	6.8	12.0	9831	150	42	11	8.2	2.1	168	<.5	83-03-24	420	685	6.8	11.0	9831	290	71	27	11	1.9	174	32	82-08-25	--	490	6.9	14.0	9831	250	71	18	11	.8	145	20	82-08-16	--	--	6.8	16.0	9831	300	79	24	12	1.6	151	26	83-03-22	480	590	7.0	10.0	9831	280	78	21	28	3.9	260	.5	CEDAR						82-02-17	45	760	7.4	12.0	9831	410	93	43	16	.7	320	20	83-07-21	30	920	7.2	13.5	9831	470	130	36	17	2.4	343	35	83-07-21	20	745	7.6	13.0	9831	390	100	33	17	2.1	360	13	CERRO GORDO						83-02-10	10	690	7.0	10.0	9831	350	79	37	20	8.3	375	3.5	83-02-10	10	725	7.0	10.0	9831	370	72	46	24	11	391	8.0	83-02-10	1440	735	7.0	12.0	9831	310	81	27	38	10	336	5.0	CHEROKEE						82-08-04	15	1290	7.3	11.0	9831	660	190	46	50	8.3	328	3.5	83-01-12	10	--	7.3	11.0	9831	300	84	23	24	4.9	280	.5	83-01-12	10	--	7.2	11.0	9831	720	200	54	75	9.5	288	4.0	83-01-13	10	540	7.2	11.0	9831	290	79	23	24	3.3	271	1.0	83-01-13	10	540	7.3	11.0	9831	270	75	21	16	3.1	262	.5	83-01-13	10	1000	7.4	11.0	9831	470	130	36	47	6.5	290	1.5	83-01-13	10	--	7.4	11.0	9831	370	100	28	39	6.0	290	1.5	83-01-12	15	--	7.4	12.0	9831	540	140	47	110	10	317	8.0	83-01-12	15	1900	7.4	14.0	9831	930	250	74	100	14	316	6.5
DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (0002B)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CaCO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)																																																																																																																																																																																																																																																																																																																																																																																						
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83-02-10	10	690	7.0	10.0	9831	350	79	37	20	8.3	375	3.5																																																																																																																																																																																																																																																																																																																																																																																						
83-02-10	10	725	7.0	10.0	9831	370	72	46	24	11	391	8.0																																																																																																																																																																																																																																																																																																																																																																																						
83-02-10	1440	735	7.0	12.0	9831	310	81	27	38	10	336	5.0																																																																																																																																																																																																																																																																																																																																																																																						
CHEROKEE																																																																																																																																																																																																																																																																																																																																																																																																		
82-08-04	15	1290	7.3	11.0	9831	660	190	46	50	8.3	328	3.5																																																																																																																																																																																																																																																																																																																																																																																						
83-01-12	10	--	7.3	11.0	9831	300	84	23	24	4.9	280	.5																																																																																																																																																																																																																																																																																																																																																																																						
83-01-12	10	--	7.2	11.0	9831	720	200	54	75	9.5	288	4.0																																																																																																																																																																																																																																																																																																																																																																																						
83-01-13	10	540	7.2	11.0	9831	290	79	23	24	3.3	271	1.0																																																																																																																																																																																																																																																																																																																																																																																						
83-01-13	10	540	7.3	11.0	9831	270	75	21	16	3.1	262	.5																																																																																																																																																																																																																																																																																																																																																																																						
83-01-13	10	1000	7.4	11.0	9831	470	130	36	47	6.5	290	1.5																																																																																																																																																																																																																																																																																																																																																																																						
83-01-13	10	--	7.4	11.0	9831	370	100	28	39	6.0	290	1.5																																																																																																																																																																																																																																																																																																																																																																																						
83-01-12	15	--	7.4	12.0	9831	540	140	47	110	10	317	8.0																																																																																																																																																																																																																																																																																																																																																																																						
83-01-12	15	1900	7.4	14.0	9831	930	250	74	100	14	316	6.5																																																																																																																																																																																																																																																																																																																																																																																						

GROUND-WATER QUALITY DATA

DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
CARROLL												
82-09-15	66	.24	9.4	470	2.7	<50	270	<2	<5	<10	<50	<50
82-03-01	5.7	.33	17	360	<.04	<50	570	<2	<5	<2	7100	<50
82-04-19	61	.30	13	384	.06	<5	100	<2	<5	<10	3100	<50
82-09-10	170	.50	12	555	.02	<10	100	<1	<10	<10	690	<10
CASS												
83-03-24	150	.20	25	512	7.5	<10	100	<1	<10	<10	40	<10
83-03-23	120	.15	20	498	--	<10	300	<1	<10	<10	990	<10
83-03-23	10	.20	22	176	.09	<10	200	<1	<10	20	<10	<10
83-03-24	49	.20	22	416	9.5	<10	200	<1	<10	10	30	<10
82-08-25	36	.20	23	330	13	<10	200	<1	<10	10	30	<10
82-08-16	88	.20	22	391	6.1	<10	200	<1	<10	30	<10	<10
83-03-22	88	.40	22	387	<.02	<10	<100	<1	<10	20	80	<10
CEDAR												
82-02-17	60	.25	24	491	5.0	<10	200	<1	<10	<10	150	<10
83-07-21	100	.20	13	588	<.02	<10	100	<1	<10	<10	1500	<10
83-07-21	26	.30	19	406	<.02	<10	100	<1	<10	<10	1800	<10
CERRO GORDO												
83-02-10	17	1.8	8.5	397	<.02	<10	200	<1	<10	10	190	<10
83-02-10	9.8	2.0	8.2	410	<.02	<10	200	<1	<10	10	80	<10
83-02-10	77	.60	7.2	446	<.02	<10	<100	<1	<10	10	160	<10
CHEROKEE												
82-08-04	410	.70	30	958	.14	<10	<100	<1	<10	<10	620	<10
83-01-12	61	.60	28	336	<.02	<10	<100	<1	<10	<10	1600	<10
83-01-12	560	.80	20	1160	<.02	<10	<100	<1	<10	<10	3700	<10
83-01-13	62	.20	34	353	.23	<10	100	<1	<10	10	30	<10
83-01-13	30	.20	31	318	.07	<10	100	<1	<10	10	50	<10
83-01-13	270	.80	33	725	<.02	<10	<100	<1	<10	<10	680	<10
83-01-13	140	.80	25	500	<.02	<10	<100	<1	<10	10	1000	<10
83-01-12	430	.80	19	1030	.57	<10	<100	<1	<10	10	200	<10
83-01-12	860	1.2	12	1560	<.02	<10	<100	<1	<10	<10	1800	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS RA-226) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLVED (PC/L) (82305)		
CARROLL												
82-09-15	120	.1	<50	<5	<20	--	--	--	--	--		
82-03-01	30	<.1	<5	<5	<20	1.3	1.0	--	--	--		
82-04-19	280	<.1	<5	<5	<20	1.7	3.0	--	--	--		
82-09-10	60	<1.0	<10	<10	<10	3.4	7.0	.8	2.0	--		
CASS												
83-03-24	120	<1.0	<10	<10	10	1.0	2.0	--	--	33		
83-03-23	2800	<1.0	<10	<10	10	1.9	4.0	--	--	35		
83-03-23	20	<1.0	<10	<10	10	2.0	7.0	--	--	<10		
83-03-24	10	<1.0	<10	<10	<10	.6	<.3	--	--	15		
82-08-25	<10	<1.0	<10	<10	30	1.5	3.0	--	--	65		
82-08-16	80	<1.0	<10	<10	40	.9	2.0	--	--	<10		
83-03-22	490	<1.0	<10	<10	<10	2.3	6.0	--	--	<10		
CEDAR												
82-02-17	110	<1.0	<10	<10	30	.4	<.3	--	--	<10		
83-07-21	220	<1.0	<10	<10	<10	2.1	3.0	1.5	1.2	--		
83-07-21	80	<1.0	<10	<10	<10	1.6	<.3	--	--	--		
CERRO GORDO												
83-02-10	<10	<1.0	<10	<10	10	1.4	8.0	--	--	<10		
83-02-10	<10	<1.0	<10	<10	20	1.0	12	--	--	<10		
83-02-10	<10	<1.0	<10	<10	30	5.1	15	4.7	2.4	<10		
CHEROKEE												
82-08-04	690	<1.0	<10	<10	90	<.2	8.0	--	--	<10		
83-01-12	120	<1.0	<10	<10	10	<.1	2.0	--	--	<10		
83-01-12	280	<1.0	<10	<10	10	<.1	13	--	--	<10		
83-01-13	<10	<1.0	<10	<10	20	3.9	3.0	.1	<.50	<10		
83-01-13	20	<1.0	<10	<10	10	3.5	3.0	.3	.50	<10		
83-01-13	320	<1.0	<10	<10	40	3.7	11	2.9	<.50	<10		
83-01-13	290	<1.0	<10	<10	30	.7	2.0	--	--	<10		
83-01-12	180	<1.0	<10	<10	<10	2.2	6.0	--	--	12		
83-01-12	80	<1.0	<10	<10	10	10	23	9.3	1.6	<10		

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
CHEROKEE					
424934095475501	09342W34CCBB 1914 MARCUS CITY NO 1	83-01-12	364STPR	1300	150
CLAY					
430905095110201	09637W118DBD 1976 SPENCER NO 6	82-12-10	110QRNR	35	80
420922095193501	09638W03CCDD 1976 EVERLY TOWN NO 3	82-08-25	111ALVM	16	200
425507095203901	09438W33BCDA 1967 PETERSON TOWN NO 3	82-12-09	112PLSC	101	136
430105095022101	09536W25ACDD 1975 GILLETT GROVE NO 1	82-09-17	112PLSC	40	80
430353095171001	09538W12BCAB 1978 ROYAL NO 1	82-12-09	112PLSC	380	170
430811095010501	09635W18ACAC 1968 DICKENS NO 1	82-08-26	112PLSC	35	--
430923095113401	09637W03DDDD 1971 SPENCER NO 1	82-07-12	112PLSC	35	100
425656095004802	09435W19ADAA 1974 WEBB TOWN NO 2	82-12-10	344CDVL	615	60
430838095073301	09636W08CCDA 10400 1958 SPENCER NO 1	82-12-10	371JRDN	970	1000

CLAYTON					
424043091350902	09106W22DABD 07207 1955 STRAWBERRY POINT	82-02-26	358ALXD	210	135

CLINTON					
414729090151801	08106E27CBC 22806 CAMANCHE IA 3	82-02-09	1430 112PLSC	99	300

CRAWFORD					
421004095272701	08540W13CCCC 1917 SCHLESWIG NO 3-WEST	82-03-03	111ALVM	30	215
421125095193101	08539W12ADDB 1937 KIRON NO 4	82-03-03	111ALVM	25	7.5

DALLAS					
413553094112001	07829W04ACC 00875 1938 REDFIELD NO 1	82-05-17	112PLSC	42	130
413723094002401	07927W28BC 18269 1966 ADEL NO 1	82-06-03	112PLSC	55	330

DES MOINES					
410015091093401	07203W25CBCC 24057 1976 MEDIAPOLIS NO 4	83-08-16	330MDVU	146	95

DICKINSON					
431822094582601	09835W16ADDD 12845 1925 TERRIL	82-01-08	110QRNR	128	90

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)
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CHEROKEE												
83-01-12	15	1900	7.1	14.0	9831	930	250	75	130	15	315	7.0

CLAY												
82-12-10	--	--	7.0	11.0	9831	340	93	26	4.4	2.6	240	14
82-08-25	20	864	7.2	14.0	9831	450	120	36	15	3.5	290	49
82-12-09	10	--	7.5	12.0	9831	520	140	41	20	4.2	342	44
82-09-17	15	860	7.4	11.0	9831	470	130	35	13	1.2	366	24

82-12-09	10	2000	7.5	10.0	9831	920	250	72	160	4.7	356	6.5
82-08-26	10	994	7.2	10.0	9831	590	150	53	18	6.2	540	.5
82-07-12	20	745	7.5	11.0	9831	420	120	28	4.0	5.0	226	3.0
82-12-10	10	1900	7.4	11.0	9831	910	250	70	170	11	279	6.0
82-12-10	10	1200	7.2	9.0	9831	510	120	52	99	7.3	179	13

CLAYTON												
82-02-26	30	425	7.6	9.5	9831	220	55	21	4.7	2.6	180	4.0

CLINTON												
82-02-09	30	321	8.0	12.0	9831	150	35	14	6.7	1.4	81	10

CRAWFORD												
82-03-03	--	2310	7.3	10.5	2000	1600	440	130	340	--	193	20
82-03-03	20	653	7.5	10.0	2000	380	110	24	14	--	231	17

DALLAS												
82-05-17	30	705	7.3	13.0	9831	370	100	30	9.8	2.6	280	16
82-06-03	120	660	7.4	--	9831	1300	88	260	13	3.7	258	24

DES MOINES												
83-08-16	30	595	6.6	13.5	9831	300	78	26	23	<.1	330	3.0

DICKINSON												
82-01-08	120	--	7.3	10.0	9831	460	130	34	15	8.0	367	.5

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
CHEROKEE												
83-01-12	830	1.2	12	1580	.66	<10	<100	<1	<10	<10	1500	<10
CLAY												
82-12-10	73	.20	27	424	3.4	<10	100	<1	<10	<10	160	<10
82-08-25	46	.20	29	572	13	<10	200	<1	<10	<10	<10	<20
82-12-09	160	.30	29	692	<.02	<10	100	<1	<10	<10	720	<10
82-09-17	70	.20	26	595	3.2	<10	200	<1	<10	<10	<10	<10
82-12-09	810	.30	19	1660	.27	<10	100	<1	<10	<10	7600	<10
82-08-26	54	.20	29	643	<.02	<10	100	<1	<10	<10	2600	<10
82-07-12	180	.20	26	518	.97	<10	200	<1	<10	<10	1500	<10
82-12-10	920	.70	13	1640	<.02	<10	<100	<1	<10	10	6300	<10
82-12-10	500	.30	9.7	955	.05	<10	<100	<1	<10	<10	4300	<10
CLAYTON												
82-02-26	24	.30	11	244	1.6	<10	<100	<1	<10	<10	<10	<10
CLINTON												
82-02-09	23	<.10	22	217	9.7	<10	<100	<1	<10	20	<10	<10
CRAWFORD												
82-03-03	1800	.22	13	3260	.20	<50	7	<2	<5	<2	2900	<50
82-03-03	98	.28	12	484	1.6	<50	290	<2	<5	<2	<50	<50
DALLAS												
82-05-17	87	.20	12	433	<.02	<10	200	<1	<10	<10	130	<10
82-06-03	64	.30	12	417	.10	<10	300	<1	<10	20	1500	<10
DES MOINES												
83-08-16	18	.50	12	276	.07	<10	500	<1	<10	<10	520	<10
DICKINSON												
82-01-08	110	.40	31	570	<.02	20	<100	<1	<10	<10	2400	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
CHEROKEE												
83-01-12	80	<1.0	<10	<10	<10	20	13	25	8.0	2.3	<10	
CLAY												
82-12-10	80	<1.0	<10	<10	<10	10	<.1	2.0	--	--	20	
82-08-25	<10	<1.0	<10	<10	<10	30	1.1	3.0	--	--	13	
82-12-09	620	<1.0	<10	<10	<10	10	1.4	3.0	--	--	28	
82-09-17	<10	<1.0	<10	<10	<10	20	2.4	<.5	--	--	18	
82-12-09	150	<1.0	<10	<10	<10	10	2.7	5.0	--	--	<10	
82-08-26	670	<1.0	<10	<10	<10	70	3.1	6.0	.2	1.8	11	
82-07-12	500	<1.0	<10	<10	<10	20	<.1	4.0	--	--	<10	
82-12-10	160	<1.0	<10	<10	<10	<10	7.2	11	2.9	.80	<10	
82-12-10	130	<1.0	<10	<10	<10	10	8.0	13	1.5	2.1	<10	
CLAYTON												
82-02-26	<10	<1.0	<10	<10	<10	<10	1.3	5.0	--	--	<10	
CLINTON												
82-02-09	10	<1.0	<10	<10	<10	<10	<.1	1.0	--	--	13	
CRAWFORD												
82-03-03	1400	.1	<5	<5	<5	22	.1	8.0	--	--	--	
82-03-03	1800	.1	<5	<5	<5	<20	1.2	3.0	--	--	--	
DALLAS												
82-05-17	340	<1.0	<10	<10	<10	10	2.0	4.0	.4	1.4	21	--
82-06-03	350	<1.0	<10	<10	<10	30	.4	5.0	--	--	--	
DES MOINES												
83-08-16	390	<.1	<10	<10	<10	60	<.1	15	--	--	--	
DICKINSON												
82-01-08	220	<1.0	<10	<10	<10	10	1.5	4.0	--	--	16	

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)							
DICKINSON												
432558094564101	10038W35CDAD 1979 SUPERIOR NO 2	83-01-05	110QRNR	105	40							
DUBUQUE												
422654090561201	08801W11CBB 17109 EPPWORTH TOWN 2	82-02-26	358ALXD	220	180							
FAYETTE												
425606091565501	09409W30ABAA 25513 1978 HAWKEYE 78-1	82-05-27	112PLSC	85	90							
425719091482401	09408W17DAAC 08614 1957 WEST UNION NO 1	82-02-25	355NIGR	64	300							
425036091480101	09308W288BDD 03479 1948 FAYETTE NO 1	82-05-27	358ALXD	80	200							
FLOYD												
430458092403703	09516W01AAB 15317 1963 CHARLES CITY NO 7	82-03-24	344CDVL	185	2000							
430726092441501	09616W21ABDD 03352 1948 FLOYD TOWN WELL	82-03-24	344RPID	193	90							
FRANKLIN												
424312093132101	09120W05DADD 1975 HAMPTON NO 6	82-03-23	110QRNR	44	300							
425341093132501	09320W05DDD 1956 SHEFFIELD NO 2	82-03-23	110QRNR	27	45							
424537093220501	09221W19CCD 1900 LATIMER NO 1	83-02-09	330MSSP	170	100							
424044093080101	09119W19DBB 03918 1949 GENEVA	83-02-09	341APLG	160	200							
GREENE												
415449094161501	08229W18CAAA 26748 1982 IGS & USGS WC #116	82-08-25	320PSLV	100	2.0							
415449094173201	08230W13CABA 26750 1982 IGS & USGS WC #118	82-08-26	320PSLV	230	15							
420950094151101	08529W20BAAD 03497 1948 PATON TOWN NO 1	82-04-22	325DSMS	400	87							
420148094142002	08329W04BCDC 00000 1925 GRAND JUNCTION NO 1	82-09-16	330MSSP	320	200							
GRUNDY												
421322092522001	08617W31ABDA 13238 CONRAD NO 3	83-08-31	339HMPN	120	165							
421336092524401	08617W30CDDB 19098 CONRAD NO 4	83-08-31	339HMPN	130	135							
422413092474601	08817W26DBC 1952 HOLLAND TOWN WELL	83-09-01	344CDVL	463	60							
422747092374901	08815W05CBB 07401 DIKE 2	83-08-31	344CLVL	300	125							
423140092423001	08916W14BB 08098 STOUT NO 1	83-09-01	344CLVL	405	90							
DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM SOLVED AS (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB AS CaCO3 (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
DICKINSON												
83-01-05	40	1320	7.2	9.0	9831	620	170	48	13	5.3	362	5.5
DUBUQUE												
82-02-26	20	660	7.9	11.0	9831	360	88	34	9.4	2.0	277	23
FAYETTE												
82-05-27	30	660	7.4	11.0	9831	310	100	15	12	1.0	244	15
82-02-25	30	850	7.3	10.0	9831	420	110	35	22	4.0	299	54
82-05-27	30	710	7.3	12.0	9831	330	95	23	13	7.0	289	23
FLOYD												
82-03-24	30	420	7.9	10.0	9831	230	63	17	3.4	.4	212	1.5
82-03-24	60	470	7.8	9.0	9831	260	76	16	3.9	<.1	207	5.0
FRANKLIN												
82-03-23	240	655	7.4	10.5	9831	370	95	31	5.1	3.3	299	7.5
82-03-23	30	695	7.3	9.0	9831	360	93	30	4.1	<.1	266	3.0
83-02-09	10	635	7.1	10.0	9831	330	90	25	15	1.8	366	<.5
83-02-09	10	787	7.0	10.0	9831	430	110	37	16	3.0	364	22
GREENE												
82-08-26	240	600	7.4	15.0	9831	410	110	33	36	9.7	366	2.0
82-08-26	240	650	7.4	12.0	9831	410	110	34	38	6.8	499	.5
82-04-22	10	1180	7.5	11.0	2000	450	110	41	92	17	388	6.0
82-09-16	10	720	7.2	12.0	2000	250	64	23	57	11	387	6.0
GRUNDY												
83-08-31	15	590	7.5	12.0	9831	310	85	23	8.7	.7	246	9.5
83-08-31	15	702	7.3	12.0	9831	350	84	34	9.9	3.7	276	16
83-09-01	20	1200	7.5	11.0	9831	700	180	60	11	4.2	216	1.0
83-08-31	15	597	7.7	12.0	9831	260	64	24	21	3.6	268	<.8
83-09-01	20	466	7.2	12.0	9831	240	65	19	5.9	2.2	218	.8

GROUND-WATER QUALITY DATA

DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	-NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
DICKINSON												
83-01-05	280	.20	32	806	<.02	20	<100	<1	<10	<10	4000	<10
DUBUQUE												
82-02-26	45	.15	15	404	4.3	<10	100	<1	<10	<10	10	<10
FAYETTE												
82-05-27	79	.20	16	435	.68	<10	<100	<1	<10	<10	520	<10
82-02-25	38	.20	10	318	9.7	<10	100	<1	<10	<10	<10	<10
82-05-27	42	.20	13	422	4.3	<10	<100	<1	<10	20	30	<10
FLOYD												
82-03-24	18	.80	13	251	.05	<10	400	<1	<10	<10	320	<10
82-03-24	39	.40	13	316	.18	<10	200	<1	<10	<10	<10	<10
FRANKLIN												
82-03-23	54	.30	29	403	.79	<10	400	<1	<10	20	790	<10
82-03-23	22	.20	23	428	16	<10	<100	<1	<10	<10	20	<10
83-02-09	<.1	.40	21	370	<.02	<10	400	<1	<10	10	1900	<10
83-02-09	72	.20	13	514	<.02	<10	300	<1	<10	10	1800	<10
GREENE												
82-08-25	94	.50	7.8	523	<.02	<10	<100	<1	<10	<10	620	<10
82-08-26	4.6	.26	25	520	<.02	<10	400	<1	<10	<10	500	<10
82-04-22	130	.55	7.1	746	.09	<5	19	<2	<5	<10	670	<50
82-09-16	<5.0	1.1	4.3	470	<.04	<50	350	<2	<5	<10	600	<50
GRUNDY												
83-08-31	37	.25	17	326	5.0	<10	<100	<1	<10	<10	30	<10
83-08-31	50	.25	14	379	4.3	<10	200	<1	<10	<10	30	<10
83-09-01	490	1.6	9.9	856	.02	<10	<100	<1	<10	10	650	<10
83-08-31	39	.70	16	290	.14	<10	500	<1	<10	10	800	<10
83-09-01	27	.90	9.6	205	.02	<10	100	<1	<10	<10	440	<10

DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS RA-228) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)
DICKINSON										
83-01-05	560	<1.0	<10	<10	20	2.7	8.0	--	--	--
DUBUQUE										
82-02-26	<10	<1.0	<10	<10	120	.9	<.5	--	--	11
FAYETTE										
82-05-27	320	<1.0	<10	<10	10	1.6	7.0	--	--	15
82-02-25	<10	<1.0	<10	<10	<10	.4	1.0	--	--	<10
82-05-27	20	<1.0	<10	<10	10	.6	5.0	--	--	--
FLOYD										
82-03-24	20	<1.0	<10	<10	10	1.1	<.3	--	--	<10
82-03-24	60	<1.0	<10	<10	20	.9	3.0	--	--	<10
FRANKLIN										
82-03-23	380	<1.0	<10	<10	10	1.3	3.0	--	--	<10
82-03-23	<10	<1.0	<10	<10	<10	1.9	<.5	--	--	<10
83-02-09	110	<1.0	<10	<10	<10	1.3	4.0	--	--	<10
83-02-09	110	<1.0	<10	<10	10	.7	4.0	--	--	<10
GREENE										
82-08-25	160	<1.0	<10	<10	10	1.4	9.0	--	--	--
82-08-26	60	<1.0	<10	<10	<10	9.9	11	6.0	4.2	--
82-04-22	15	.1	<5	<5	<20	3.3	10	1.0	--	--
82-09-16	41	.1	<50	<5	<20	2.1	9.0	3.8	--	--
GRUNDY										
83-08-31	<10	<1.0	<10	<10	10	1.2	1.0	--	--	--
83-08-31	50	<1.0	<10	<10	30	2.5	2.0	--	--	--
83-09-01	20	<1.0	<10	<10	10	.8	3.0	--	--	--
83-08-31	50	<1.0	<10	<10	20	1.2	3.0	--	--	--
83-09-01	30	<1.0	<10	<10	<10	.3	2.0	--	--	--

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
GRUNDY					
422148092461801	08717W12ADC 01897 GRUNDY CENTER 3	83-08-31	344RPID	559	520
GUTHRIE					
414624094211201	08030W04BBAD 13717 1962 YALE NO 1	82-04-19	112PLSC	82	120
415034094183503	08130W118DDA 1957 JAMAICA TOWN NO 3	82-04-19	320PSLV	196	200
415118094331301	08132W03DBDD 12608 1960 BAYARD TOWN NO 2	82-04-19	325DSMS	205	--
HAMILTON					
421833093382001	08724W34BBC 05758 1951 JEWELL NO 2	83-08-31	112PLSC	65	150
421902093344701	08723W30CBB 03492 1948 ELLSWORTH NO 1 NORTH	83-08-31	339KDRK	360	600
422842093383501	08924W35DBA 00713 1938 BLAIRSBURG NO 1	83-09-02	339KDRK	360	40
HANCOCK					
425610093473901	09425W28AADA 1958 KANAWHA NO 2	83-05-11	330MSSP	200	108
425528093364501	09423W30CCDA 16849 1964 GOODELL NO 2	83-05-11	339HMPN	144	20
425936093572401	09426W06ABAA 04864 1950 CORWITH NO 1	82-03-17	339HMPN	130	120
431308093474201	09728W18DAA 1947 CRYSTAL LAKE NO 1	83-05-11	344CDVL	300	--
HARDIN					
422134093060701	08719W07DAC 1936 ELDORA TOWN WELL	83-09-01	339HMPN	315	280
422441093035701	08819W28AABB 1964 STEAMBOAT ROCK NO 2	83-09-01	339HMPN	115	35
422453093035001	08819W21DDC 05188 1951 STEAMBOAT ROCK NO. 1	83-09-01	339HMPN	110	70
HARRISON					
413715096003101	07944W30DCAB 1941 MODALE NO 1	82-09-14	111ALVM	100	--
414236096012502	08045W25DABD 1929 MODAMIN NO 1	82-09-14	111ALVM	90	--
414842096012501	08145W24DABD 1972 LITTLE SIOUX NO 1	82-09-14	111ALVM	109	72
414955096000601	08144W18AADA 25513 1981 IGS & USGS WC #23	82-11-03	320PSLV	126	7.0
HUMBOLDT					
424836094030101	09227W05DAAD 1966 HARDY TOWN NO 1	83-05-06	110QRNR	90	--
423911094233402	09130W33ACCC 1968 PIONEER NO 1	82-03-17	112PLSC	90	--

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	AGENCY ANA-LYZING SAMPLE NUMBER (CODE) (00028)	HARD-NESS (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CAC03) (90410)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
GRUNDY												
83-08-31	15	1330	7.2	11.0	9831	810	190	62	13	4.8	220	<.5
GUTHRIE												
82-04-19	30	585	7.2	11.5	2000	340	87	29	6.0	3.0	283	1.0
82-04-19	20	636	7.8	11.5	2000	300	79	25	21	10	316	<1.0
82-04-19	20	564	7.5	12.0	2000	280	61	30	17	8.0	280	<1.0
HAMILTON												
83-08-31	15	--	7.2	13.0	9831	490	130	41	14	6.1	378	16
83-08-31	15	708	7.4	12.0	9831	280	64	29	42	5.8	377	.5
83-09-02	30	720	7.1	11.0	9831	350	65	46	41	4.8	402	.5
HANCOCK												
83-05-11	10	--	7.2	10.0	9831	360	92	31	33	4.7	400	.5
83-05-11	10	652	7.6	10.0	9831	320	70	34	12	2.1	350	.5
82-03-17	30	980	7.1	10.0	9831	370	95	32	110	5.1	411	4.0
83-05-11	20	720	7.3	10.0	9831	230	46	29	24	5.8	387	3.5
HARDIN												
83-09-01	20	577	7.6	12.0	9831	280	68	27	12	3.2	276	6.0
83-09-01	30	853	7.9	12.0	9831	460	110	45	14	3.4	344	21
83-09-01	15	722	7.3	12.0	9831	360	88	34	12	2.2	326	13
HARRISON												
82-09-14	--	865	7.0	12.0	2000	410	110	33	23	8.0	429	2.0
82-09-14	30	1230	7.0	13.0	2000	620	160	54	46	11	523	36
82-09-14	20	1220	7.0	12.0	2000	630	160	57	34	11	476	17
82-11-03	210	1100	7.4	5.0	9831	380	100	32	130	18	362	4.5
HUMBOLDT												
83-05-06	--	787	7.2	12.0	9831	390	100	35	20	5.3	376	16
82-03-17	--	1250	7.0	10.0	9831	610	160	51	83	3.9	436	2.0

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C. DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
GRUNDY												
83-08-31	580	.20	10	1110	.05	<10	<100	<1	<10	10	390	<10
GUTHRIE												
82-04-19	18	.49	9.9	382	.45	<5	480	<2	<5	<10	860	<50
82-04-19	12	.21	10	380	.08	47	900	<2	<5	<10	4200	<50
82-04-19	6.0	.55	5.2	314	.04	<5	600	<2	<5	<10	360	<50
HAMILTON												
83-08-31	130	.80	35	605	.09	<10	400	<1	<10	<10	6800	<10
83-08-31	3.1	.80	25	351	.11	40	800	<1	<10	<10	4100	<10
83-09-02	52	1.2	15	411	.02	<10	100	<1	<10	<10	90	<10
HANCOCK												
83-05-11	54	.20	20	463	<.02	<10	200	<1	<10	<10	1400	<10
83-05-11	12	.30	31	364	<.02	20	300	<1	<10	<10	2400	<10
82-03-17	160	.40	23	672	<.02	<10	300	<1	<10	<10	1300	<10
83-05-11	8.3	.20	29	411	<.02	<10	600	<1	<10	<10	1900	<10
HARDIN												
83-09-01	27	.30	15	298	.50	<10	100	<1	<10	<10	690	<10
83-09-01	64	.10	25	512	4.8	<10	200	<1	<10	<10	20	<10
83-09-01	50	.20	17	386	2.7	<10	200	<1	<10	<10	20	<10
HARRISON												
82-09-14	23	.29	14	510	<.04	<50	790	<2	<5	<10	6500	<50
82-09-14	110	.26	14	840	<.04	<50	300	<2	<5	<10	8400	<50
82-09-14	180	.30	15	820	<.04	<50	110	<2	<5	<10	8500	<50
82-11-03	300	.40	16	738	2.3	<10	<100	<1	<10	50	110	<10
HUMBOLDT												
83-05-06	61	.20	29	516	.07	<10	300	<1	<10	<10	510	<10
82-03-17	310	.40	21	941	<.02	<10	300	<1	<10	<10	2200	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS RA-226) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
GRUNDY												
83-08-31		10	<1.0	<10	<10	10	1.3	4.0	--	--		
GUTHRIE												
82-04-19		800	.1	<5	<5	<20	4.2	5.0	1.7	.90		
82-04-19		24	<.1	<5	<5	<20	1.9	4.0	--	--		
82-04-19		67	<.1	<5	<5	<20	2.5	10	2.3	--		
HAMILTON												
83-08-31		170	<1.0	<10	<10	10	1.4	7.0	--	--		
83-08-31		40	<1.0	<10	<10	30	1.3	4.0	--	--		
83-09-02		10	<1.0	<10	<10	<10	.7	3.0	--	--		
HANCOCK												
83-05-11		570	<1.0	<10	<10	20	.7	5.0	--	--		
83-05-11		20	<1.0	<10	<10	10	.7	4.0	--	--		
82-03-17		130	<1.0	<10	<10	20	2.0	4.0	.7	<.40		
83-05-11		110	<1.0	<10	<10	<10	.3	8.6	--	--		
HARDIN												
83-09-01		80	<1.0	<10	<10	10	.3	4.0	--	--		
83-09-01		<10	<1.0	<10	<10	<10	2.1	.4	--	--		
83-09-01		10	<1.0	<10	<10	<10	1.0	3.0	--	--		
HARRISON												
82-09-14		620	<.1	<50	<5	<20	1.1	5.0	--	--		
82-09-14		470	.2	<50	<5	<20	.8	6.0	--	--		
82-09-14		420	.2	<50	<5	<20	.7	6.0	--	--		
82-11-03		90	<1.0	<10	<10	220	15	15	2.5	2.6		
HUMBOLDT												
83-05-06		20	<1.0	<10	<10	<10	2.4	3.0	--	41		
82-03-17		590	<1.0	<10	<10	20	3.4	4.0	.5	.70		

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
HUMBOLDT					
424308094132601	09129W01CCAC 1973 HUMBOLDT TOWN WELL	82-03-17	330MSSP	150	1000
424548094171901	09229W200DB 03374 1948 RUTLAND	83-05-12	339GLMC	168	--
424350094260001	09130W068A 09420 1957 GILMORE CITY NO 2	83-05-12	339HMPN	207	225
424939093584201	09327W36ACD 04815 1951 RENWICK NO 2	83-05-06	339HMPN	226	190
424128094030902	09127W170DB 1962 THOR NO 2	83-05-06	339KDRK	375	60
425208094171401	09329W170AD 03375 1948 BODE NO 2	83-05-12	341APLG	259	135

IDA					
421908095353701	08741W26CBBB 1972 BATTLE CREEK NO 3	82-12-22	112PLSC	59	275
422018095205101	08739W23ABDD 1923 ARTHUR TOWN NO 1	82-07-14	112PLSC	24	250
422106095280201	08740W14ACBB 1965 IDA GROVE NO 4	82-12-22	112PLSC	68	480
422109095275401	08740W14A8DC 1945 IDA GROVE NO 2	82-07-14	112PLSC	68	200
423033095250501	08939W23CADA 1957 GALVA TOWN NO 2	82-08-04	112PLSC	48	70
422009095210101	08739W23ACBD 1984 1967 ARTHUR TOWN NO 4	82-12-22	210CRCS	330	20
422915095323501	08940W358BB 05120 1951 HOLSTEIN TOWN NO 4	82-12-22	217DKOT	430	90

IOWA					
414742092044001	08111W25CACA 1980 MARENGO NO 8	83-02-23	111ALVM	40	200
413422092093601	07811W08CBCA 21322 1968 MILLERSBURG NO 1	83-02-23	112PLSC	175	32
413501092001101	07810W03CCCC 1970 PARNELL NO 2	83-02-17	112PLSC	364	22
413920092003501	07910W16AAC 17915 WILLIAMSBURG 3	83-02-23	112PLSC	186	125
413927092005401	07910W09CDDD 17915 WILLIAMSBURG 5	83-02-23	112PLSC	270	225
414335092175001	08012W19BCC 01199 VICTOR NO 1	83-02-23	112PLSC	349	133
414514092105801	08012W12ADDD 1979 LADORA NO 2	83-02-23	112PLSC	70	100
414647091580701	08110W35DAAC 1980 SOUTH AMANA NO 120	83-02-15	112PLSC	28	100
414736091534501	08109W28DBDB 1967 MIDDLE AMANA NO 8	83-02-15	112PLSC	34	100
414821091575101	08110W24CCAC 1954 WEST AMANA NO 11	83-02-15	112PLSC	33	65
414825091511201	08109W23DADA 21060 EAST AMANA NO 2	83-02-15	340DVSL	550	50

JACKSON					
420432090401201	08402E24AAB MAQUOKETA 3	82-02-09	1200 112PLSC	60	575

JASPER					
414251092541701	08018W26AADC 1939 KELLOGG NO 2	82-12-03	111ALVM	36	40

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
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HUMBOLDT												
82-03-17	300	620	7.3	10.0	9831	330	87	28	5.5	2.7	263	14
83-05-12	20	656	7.4	12.0	9831	330	86	29	7.9	3.3	319	4.0
83-05-12	90	604	7.4	12.0	9831	300	75	27	4.2	2.0	238	13
83-05-06	10	834	7.2	11.0	9831	380	94	35	40	3.8	380	<.5
83-05-06	10	740	7.5	11.0	9831	380	93	35	21	4.9	362	1.5
83-05-12	60	915	7.0	11.0	9831	470	120	42	11	3.0	327	4.0

IDA												
82-12-22	120	--	7.4	12.0	9831	350	93	28	13	4.1	298	6.0
82-07-14	20	--	7.3	10.5	9831	350	100	25	10	.5	247	17
82-12-22	10	--	7.2	10.0	9831	430	130	25	30	4.1	304	63
82-07-14	20	760	7.4	12.0	9831	370	110	23	10	1.9	268	12
82-08-04	20	--	7.2	12.0	9831	450	130	30	20	3.1	293	27
82-12-22	15	1840	7.7	12.0	9831	760	200	64	140	11	229	6.5
82-12-22	15	1720	7.4	14.0	9831	830	230	63	92	12	280	6.5

IOWA												
83-02-23	180	525	7.5	12.0	9831	250	72	17	9.5	1.5	167	14
83-02-23	20	1410	7.6	11.5	9831	560	140	51	110	4.7	347	6.0
83-02-17	30	1460	7.8	13.0	9831	570	140	54	160	6.4	247	4.0
83-02-23	60	730	7.9	11.5	9831	190	49	17	89	3.9	387	1.5
83-02-23	30	795	7.8	11.5	9831	240	55	24	95	4.5	376	1.0

83-02-23	30	1860	7.7	12.5	9831	640	150	65	190	8.1	243	5.5
83-02-23	30	975	7.7	12.0	9831	330	82	31	96	4.3	370	3.5
83-02-15	30	750	7.0	11.5	9831	340	90	27	31	5.2	233	52
83-02-15	30	715	7.0	13.0	9831	360	86	36	17	3.2	275	36
83-02-15	30	850	6.9	13.0	9831	410	95	41	29	2.0	308	40
83-02-15	30	725	7.5	14.0	9831	300	66	33	45	7.1	283	<.5

JACKSON												
82-02-09	60	750	7.2	12.0	9831	410	97	40	16	2.3	297	30

JASPER												
82-12-03	30	885	6.7	12.0	9831	420	120	30	30	3.9	206	52

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
HUMBOLDT												
82-03-17	45	.40	20	408	3.4	<10	<100	<1	<10	<10	<10	<10
83-05-12	46	.30	23	379	.20	<10	300	<1	<10	<10	<10	<10
83-05-12	40	.30	26	384	9.9	<10	300	<1	<10	10	<10	<10
83-05-06	96	.20	20	514	<.02	<10	<100	<1	<10	10	1700	<10
83-05-06	66	.40	21	476	<.02	<10	100	<1	<10	<10	1500	<10
83-05-12	140	.30	23	602	4.1	<10	200	<1	<10	<10	<10	<10
IDA												
82-12-22	39	.30	25	409	7.0	<10	200	<1	<10	<10	60	<10
82-07-14	57	.50	16	438	15	<10	200	<1	<10	<10	<10	<10
82-12-22	77	.30	23	544	4.5	<10	<100	<1	<10	<10	50	<10
82-07-14	70	.30	23	458	8.1	<10	200	<1	<10	<10	<10	<10
82-08-04	110	.30	20	560	7.9	<10	200	<1	<10	10	430	<10
82-12-22	830	.90	8.3	1530	<.02	<10	<100	<1	<10	<10	9500	<10
82-12-22	770	.80	28	1470	<.02	<10	<100	<1	<10	<10	2400	<10
IOWA												
83-02-23	58	.10	19	318	4.5	<10	<100	<1	<10	<10	220	<10
83-02-23	460	.50	13	1050	<.02	<10	<100	<1	<10	<10	1000	<10
83-02-17	510	.40	12	1160	<.02	<10	<100	<1	<10	<10	1200	<10
83-02-23	4.1	.90	12	397	<.02	<10	500	<1	<10	<10	540	<10
83-02-23	56	.80	13	460	<.02	<10	700	<1	<10	<10	1200	<10
83-02-23	840	.30	12	1500	<.02	<10	<100	<1	<10	<10	1300	<10
83-02-23	170	.50	14	615	<.02	<10	100	<1	<10	<10	1300	<10
83-02-15	74	.10	17	473	6.6	<10	200	<1	<10	<10	80	<10
83-02-15	62	.20	18	449	1.6	<10	400	<1	<10	10	390	<10
83-02-15	78	.20	21	554	7.9	<10	300	<1	<10	<10	70	<10
83-02-15	130	.50	9.8	458	<.02	<10	<100	<1	<10	<10	480	<10
JACKSON												
82-02-09	52	.20	23	458	6.3	<10	100	<1	<10	20	<10	<10
JASPER												
82-12-03	180	.10	22	585	6.1	<10	100	<1	<10	<10	140	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PCI/L) (82305)		
HUMBOLDT												
82-03-17	<10	<1.0	10	<10	<10	2.2	16	.6	<.50	32	--	--
83-05-12	100	<1.0	<10	<10	10	.7	5.0	--	--	--	--	--
83-05-12	<10	<1.0	<10	<10	10	<.2	1.0	--	--	<10	--	--
83-05-06	500	<1.0	<10	<10	<10	1.2	3.0	--	--	21	--	--
83-05-06	130	<1.0	<10	<10	<10	2.5	5.0	--	--	12	--	--
83-05-12	50	<1.0	<10	<10	30	2.1	4.0	--	--	37	--	--
IDA												
82-12-22	<10	<1.0	<10	<10	<10	2.5	2.0	--	--	21	--	--
82-07-14	<10	<1.0	10	<10	<10	3.9	5.0	.1	<.40	--	--	--
82-12-22	<10	<1.0	<10	<10	20	1.7	5.0	--	--	12	--	--
82-07-14	<10	<1.0	<10	<10	<10	1.0	4.0	--	--	22	--	--
82-08-04	300	<1.0	<10	<10	10	3.2	3.0	.3	<.50	15	--	--
82-12-22	370	<1.0	<10	<10	30	9.1	17	4.1	2.5	23	--	--
82-12-22	930	<1.0	<10	<10	170	25	25	9.4	2.7	210	--	--
IOWA												
83-02-23	470	<1.0	<10	<10	<10	1.5	<.3	--	--	<10	--	--
83-02-23	<10	<1.0	<10	<10	10	<.1	4.0	--	--	<10	--	--
83-02-17	290	<1.0	<10	<10	<10	1.8	2.0	--	--	<10	--	--
83-02-23	<10	<1.0	<10	<10	10	.7	3.0	--	--	14	--	--
83-02-23	<10	<1.0	<10	<10	<10	1.7	5.0	--	--	12	--	--
83-02-23	50	<1.0	<10	<10	<10	1.2	7.0	--	--	<10	--	--
83-02-23	<10	<1.0	<10	<10	<10	.7	1.0	--	--	12	--	--
83-02-15	90	<1.0	<10	<10	10	.3	8.0	--	--	<10	--	--
83-02-15	1100	<1.0	<10	<10	10	.3	2.0	--	--	11	--	--
83-02-15	10	<1.0	<10	<10	20	2.4	3.0	--	--	<10	--	--
83-02-15	<10	<1.0	<10	<10	20	2.3	8.0	--	--	<10	--	--
JACKSON												
82-02-09	10	<1.0	<10	<10	<10	1.7	3.0	--	--	--	--	--
JASPER												
82-12-03	10	<1.0	<10	<10	<10	<.1	<.5	--	--	35	--	--

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
JASPER					
414220092524401	08017W30CCAA 1978 KELLOGG NO 3	82-12-03	330MSSP	95	90
JEFFERSON					
405925092100001	07211W31DCBD 1958 BATAVIA NO 1	82-02-19	112PLSC	104	--
JOHNSON					
414110091352201	07906W06BAAA 1975 CORALVILLE NO 6	82-02-16	112PLSC	82	350
KEOKUK					
411849092115401	07512W12CBCA 1958 SIGOURNEY NO 5	83-04-26	111ALVM	33	100
411849092121001	07512W11DACA 1975 SIGOURNEY NO 8	83-04-26	111ALVM	32	75
412808092141901	07712W15CCBC 1979 KESWICK NO 2	82-04-20	111ALVM	39	42
412027092122301	07612W35DBDC 1927 SIGOURNEY - ROCK ISLAND	83-04-19	330MSSP	28	125
412614092104501	07711W31BBB WEBSTER NO 1	83-04-19	338OSGE	177	50
412138091571501	07610W25ACCA 01794 KEOTA NO 2	83-04-20	339WSVL	153	100

KOSSUTH					
430417094142401	09529W02CABA 00517 1936 ALGONA NO 5	82-03-17	217DKOT	153	430
431306094192801	09729W18BCC 02333 1946 LONE ROCK NO 2	82-03-18	344CDVL	167	--
LEE					
403748091174301	05704W02C5BA 1967 FORT MADISON NO 1	83-08-16	110QRNR	149	610
403804091174001	06704W02BBDC 1979 FORT MADISON NO 2	83-08-16	111ALVM	151	610
403226091252701	06605W03CDAA 18117 1967 MONTROSE NO 1	82-03-31	112PLSC	62	175

LINN					
420007091411801	08307W17BD5A CEDAR RAPIDS NO 1. WEST	82-02-16	111ALVM	57	550
421138091471801	08508W09BAB 18947 CENTER POINT NORTH	82-02-12	344SOLN	49	95

LOUISA					
410557091023701	07302W25BBCC 1973 OAKVILLE NO 1	82-11-17	110QRNR	126	110

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS Cl) (00940)
JASPER												
82-12-03	30	545	6.8	10.5	9831	340	90	29	15	3.4	177	2.5
JEFFERSON												
82-02-19	30	720	7.4	13.0	9831	270	72	22	62	4.3	395	2.0
JOHNSON												
82-02-16	120	580	7.2	11.9	9831	330	82	31	8.4	.9	310	13
KEOKUK												
83-04-26	60	660	7.0	12.0	9831	300	85	21	14	1.1	239	16
83-04-26	30	1180	6.7	11.0	9831	410	110	33	65	1.3	151	220
82-04-20	15	645	7.1	11.0	9831	310	78	27	15	3.4	264	9.0
83-04-19	180	835	7.2	11.5	9831	370	93	34	30	2.0	313	34
83-04-19	10	945	7.0	12.0	9831	480	120	44	.25	2.8	540	<.5
83-04-20	20	885	7.0	12.5	9831	450	110	42	35	2.7	426	.5
KOSSUTH												
82-03-17	30	1130	7.1	10.0	9831	380	97	33	110	6.8	382	20
82-03-18	60	1480	7.3	9.0	9831	510	130	46	60	7.2	359	9.5
LEE												
83-08-16	1440	485	7.4	14.0	9831	210	55	18	9.3	2.3	220	14
83-08-16	1440	630	7.0	14.0	9831	320	87	26	13	1.6	340	2.6
82-03-31	30	565	7.6	12.0	9831	280	73	23	7.1	.8	232	7.5
LINN												
82-02-16	240	515	7.6	11.0	9831	260	71	20	7.3	2.7	233	13
82-02-12	120	680	6.9	11.8	9831	290	96	13	26	2.5	197	44
LOUISA												
82-11-17	30	390	7.7	12.5	9831	210	56	16	7.2	.3	214	<.5

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
JASPER												
82-12-03	180	.20	17	437	.18	<10	<100	<1	<10	<10	<10	<10
JEFFERSON												
82-02-19	20	.50	16	419	.05	<10	100	<1	<10	<10	2600	<10
JOHNSON												
82-02-16	25	.30	24	367	.25	<10	600	<1	<10	<10	350	<10
KEOKUK												
83-04-26	68	.20	18	351	.02	<10	<100	<1	<10	<10	4600	<10
83-04-26	65	.10	30	786	.16	<10	200	<1	<10	<10	24000	<10
82-04-20	61	.30	18	376	<.02	<10	100	<1	<10	<10	3000	<10
83-04-19	61	.20	17	515	3.6	<10	200	<1	<10	<10	60	<10
83-04-19	<3.0	.10	19	534	.02	<10	500	<1	<10	<10	760	<10
83-04-20	75	.30	8.9	549	<.02	<10	100	<1	<10	<10	740	<10
KOSSUTH												
82-03-17	220	.40	12	761	<.02	<10	<100	<1	<10	<10	1500	<10
82-03-18	450	.50	20	1080	<.02	<10	<100	<1	<10	<10	940	<10
LEE												
83-08-16	5.5	.10	25	217	<.02	<10	400	<1	<10	<10	4800	<10
83-08-16	5.0	.20	20	306	.02	<10	400	<1	<10	<10	3400	<10
82-03-31	38	<.10	13	338	4.1	<10	200	<1	<10	20	280	<10
LINN												
82-02-16	14	.20	15	260	.72	<10	300	<1	<10	<10	420	<10
82-02-12	71	.20	15	420	5.0	<10	100	<1	<10	<10	390	<10
LOUISA												
82-11-17	.8	.10	17	231	.07	<10	400	<1	<10	<10	2000	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
JASPER												
82-12-03	260	<1.0	<10	<10	<10	<10	1.5	<.5	--	--	<10	
JEFFERSON												
82-02-19	20	<1.0	<10	<10	<10	<10	.3	6.0	--	--	<10	
JOHNSON												
82-02-16	600	<1.0	<10	<10	<10	<10	.6	<.4	--	--	<10	
KEOKUK												
83-04-26	810	<1.0	<10	<10	<10	20	1.9	2.0	--	--	16	
83-04-26	2000	<1.0	<10	<10	<10	20	.9	1.0	--	--	--	
82-04-20	170	<1.0	<10	<10	<10	50	1.0	3.0	--	--	28	
83-04-19	<10	<1.0	<10	<10	<10	<10	1.3	1.0	--	--	<10	
83-04-19	140	<1.0	<10	<10	<10	20	.4	5.0	--	--	11	
83-04-20	40	<1.0	<10	<10	<10	<10	1.1	4.0	--	--	10	
KOSSUTH												
82-03-17	300	<1.0	<10	<10	<10	10	4.8	8.0	2.8	1.5	11	
82-03-18	120	<1.0	<10	<10	<10	40	7.6	3.0	1.4	<.40	11	
LEE												
83-08-16	1700	<1.0	<10	<10	<10	<10	1.3	4.0	--	--	--	
83-08-16	350	<1.0	<10	<10	<10	10	1.5	1.0	--	--	--	
82-03-31	170	<1.0	<10	<10	<10	20	2.5	<.4	.1	<.50	<10	
LINN												
82-02-16	680	<1.0	<10	<10	<10	<10	.6	3.0	--	--	11	
82-02-12	80	<1.0	<10	<10	<10	<10	1.8	<.5	--	--	16	
LOUISA												
82-11-17	130	<1.0	<10	<10	<10	20	1.0	1.0	--	--	<10	

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
LOUISA					
411644091110701	07503W22DCBD 18796		GRANDVIEW NORTH	82-11-17	112AFNN 176 40
411056091111501	07403W27BDD 1976	1976	WAPELLO NO 2	82-11-17	112PLSC 77 160
411539091222001	07505W36ACB 1967	1967	COLUMBUS CITY 2	82-11-17	112PLSC 166 10
411652091213801	07504W19CDA 02977	02977	COLUMBUS JUNCTION 2	82-02-17	112PLSC 80 125
4105430911151601	07304W25ADD 14419	14419	MORNING SUN 2	82-11-30	371JRDN 1820 250

LYON					
432029095593401	09844W018DB 1955	1955	GEORGE NO 2	82-09-15	110QRNR 32 118
432608096201501	10047W360CB 1968	1968	LESTER TOWN NO 2	82-09-15	110QRNR 32 45
431645096141301	09846W26DAA		DOON TOWN WELL	82-09-16	111ALVM 30 180
432636096100801	10045W338DB 1972	1972	ROCK RAPIDS NO 6	82-09-16	111ALVM 27 150
432656095525701	10043W26DD 1908	1908	LITTLE ROCK TOWN WELL	82-09-15	112WSCS 28 350

MADISON					
411047093493301	07426W27DADA		TRURO NO 2	82-03-16	112PLSC 50 50

MARION					
412144092574603	07618W20CC 1956	1956	PELLA NO 5	82-04-20	111ALVM 30 1150

MARSHALL					
420020092465001	08317W13BA 07265	1955	LE GRAND NO 2	82-12-03	339PPCH 95 75
420019092464901	08317W13BBA 24635	1977	LE GRAND NO 4	82-12-03	371JRDN 2200 150

MONONA					
415558096044901	08245W09ADA 17833	1964	BLENCOE NO 1	82-09-15	111ALVM 100 60
420140096054001	08345W04CDB 1963	1963	ONAWA NO 1 (OLD #8)	82-09-15	111ALVM 112 500
420735096085701	08446W01BABC 1974	1974	WHITING WEST	82-09-14	111ALVM 94 155
415901095465601	08342W19CACC 1974	1974	SOLDIER	82-03-02	112PLSC 172 110

MONTGOMERY					
405850095061701	07137W04ACD 06207	1953	STANTON NO 1	82-07-01	217DKOT 150 --

MUSCATINE					
412234091034201	07602W22AAA		MUSCATINE NO 14	82-02-17	111ALVM 74 600

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM DIS-SOLVED (MG/L AS Na) (00930)	POTASSIUM DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CaCO3) (90410)	CHLORIDE DIS-SOLVED (MG/L AS Cl) (00940)
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LOUISA												
82-11-17	30	465	7.4	12.0	9831	250	68	19	8.7	.4	257	2.0
82-11-17	1200	375	7.8	12.5	9831	200	57	14	5.7	.3	156	3.0
82-11-17	60	740	7.5	12.5	9831	340	80	33	45	3.6	428	<.5
82-02-17	120	680	7.4	12.0	9831	300	77	26	36	3.5	354	10
82-11-30	30	1630	7.6	21.0	9831	370	86	37	220	20	227	80

LYON												
82-09-15	15	960	7.4	11.0	9831	500	120	48	23	3.2	310	20
82-09-15	15	1000	7.8	13.0	9831	530	140	45	20	3.6	287	12
82-09-16	60	740	7.5	11.0	9831	390	99	34	12	3.0	273	25
82-09-16	60	695	7.2	12.0	9831	350	84	35	18	3.5	265	22
82-09-15	240	1420	7.2	12.0	9831	640	200	35	37	5.2	333	22

MADISON												
82-03-16	30	585	6.7	7.0	9831	250	79	13	15	<.1	195	20

MARION												
82-04-20	--	670	7.2	9.5	9831	320	86	26	12	4.6	222	24

MARSHALL												
82-12-03	30	720	7.2	10.8	9831	370	98	31	17	2.2	255	26
82-12-03	30	990	7.5	16.6	9831	370	83	40	78	19	311	9.5

MONONA												
82-09-15	30	1170	7.0	12.0	2000	620	160	52	40	11	544	4.0
82-09-15	30	865	7.0	12.0	2000	440	120	34	26	11	411	13
82-09-14	20	1160	7.0	12.0	2000	570	150	49	37	11	407	31
82-03-02	20	1660	7.8	11.5	2000	710	200	50	180	--	232	8.0

MONTGOMERY												
82-07-01	--	525	7.4	15.0	9831	270	76	19	14	3.7	252	10

MUSCATINE												
82-02-17	--	455	7.4	13.0	9831	220	57	18	10	2.8	187	14

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
LOUISA												
82-11-17	1.0	.20	22	263	<.02	<10	200	<1	<10	<10	2200	<10
82-11-17	42	.10	19	235	.07	<10	100	<1	<10	<10	900	<10
82-11-17	2.8	.40	19	421	<.02	<10	300	<1	<10	20	1900	<10
82-02-17	20	.30	18	389	.09	<10	400	<1	<10	<10	4300	<10
82-11-30	510	1.3	10	1130	.07	<10	<100	<1	<10	<10	30	<10
LYON												
82-09-15	150	.60	23	648	7.5	<10	200	<1	<10	<10	<10	<10
82-09-15	260	.30	21	734	.38	10	100	<1	<10	<10	2600	<10
82-09-16	74	.20	20	488	6.3	<10	200	<1	<10	10	<10	<10
82-09-16	92	.20	20	477	2.2	<10	200	<1	<10	<10	<10	<10
82-09-15	390	.30	26	1110	2.3	<10	<100	<1	<10	<10	830	<10
MADISON												
82-03-16	56	.30	25	352	.84	<10	200	<1	<10	10	13000	<10
MARION												
82-04-20	63	.35	13	402	4.7	<10	200	<1	<10	20	650	<10
MARSHALL												
82-12-03	84	.20	23	464	6.8	<10	200	<1	<10	<10	<10	<10
82-12-03	210	1.2	7.4	624	<.02	<10	<100	<1	<10	<10	3200	<10
MONONA												
82-09-15	130	.30	15	760	.05	<50	170	<2	<5	<10	8700	<50
82-09-15	53	.37	15	550	<.04	<50	240	<2	<5	<10	6100	<50
82-09-14	190	.37	14	750	<.04	<50	130	<2	<5	<10	8300	<50
82-03-02	680	.28	14	1440	.57	<50	13	<2	<5	<2	1200	<50
MONTGOMERY												
82-07-01	16	.30	12	288	.68	10	400	4	<10	<10	1900	<10
MUSCATINE												
82-02-17	40	.10	16	262	.59	<10	100	<1	<10	<10	40	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (D1515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
LOUISA												
82-11-17	70	<1.0	<10	<10	10	.6	1.0	--	--	<10		
82-11-17	200	<1.0	<10	<10	10	1.0	1.0	--	--	<10		
82-11-17	30	<1.0	<10	<10	10	<.1	<.3	--	--	18		
82-02-17	220	<1.0	<10	<10	<10	1.9	2.0	--	--	<10		
82-11-30	10	<1.0	<10	<10	<10	17	22	4.5	<.50	<10		
LYON												
82-09-15	130	<1.0	10	<10	30	9.3	5.0	.3	<.40	21		
82-09-15	400	<1.0	<10	<10	160	11	5.0	.3	.80	21		
82-09-16	<10	<1.0	<10	<10	30	<.1	3.0	--	--	12		
82-09-16	<10	<1.0	<10	<10	30	1.0	4.0	--	--	17		
82-09-15	230	<1.0	<10	<10	20	5.2	8.0	<.2	.80	12		
MADISON												
82-03-16	1100	<1.0	<10	<10	40	.3	2.0	--	--	<10		
MARION												
82-04-20	430	<1.0	<10	<10	<10	3.7	1.0	.2	.60	15		
MARSHALL												
82-12-03	<10	<1.0	<10	<10	<10	1.0	<.5	--	--	--		
82-12-03	80	<1.0	<10	<10	<10	12	22	5.8	1.6	<10		
MONONA												
82-09-15	530	.1	<50	<5	<20	2.5	2.0	--	--	--		
82-09-15	380	.1	<50	<5	<20	1.1	6.0	--	--	--		
82-09-14	670	<.1	<50	<5	<20	.4	5.0	--	--	--		
82-03-02	190	<.1	<5	<5	43	2.2	8.0	.2	1.2	--		
MONTGOMERY												
82-07-01	<10	<1.0	<10	<10	20	.9	2.0	--	--	<10		
MUSCATINE												
82-02-17	40	<1.0	<10	<10	<10	.3	9.0	--	--	<10		

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
MUSCATINE					
412240091040701	07602W15DCC		MUSCATINE NO 15	82-02-17	111ALVM 26 800
O BRIEN					
431159095500901	09742W29BABA	1959	SHELDON NO 8	82-09-17	111ALVM 30 300
430517095364602	09640W31DBCD		PRIMGAR NO 3	82-08-06	112PLSC 20 200
431045095413801	09741W33BDDD	1969	SANBORN NO 4	82-09-17	112PLSC 80 300
425824095300901	09439W07CAB	06045	SUTHERLAND 3	82-12-09	210CRCS 471 88
431140095505801	09742W30ACDB	15818	SHELDON TOWN WELL	82-12-08	210CRCS 615 350
431035095283201	09739W32ACC	12222	HARTLEY TOWN WELL	82-12-09	217DKOT 660 225

OSCEOLA					
431703095272401	09839W28ABBB	1973	MELVIN NO 2	82-09-16	110QRNR 40 100
431842095473301	09842W15ACBB		ASHTON NO 1	82-09-16	110QRNR 68 150
432314095320001	09940W14DCCC		OCHEYEDAN NO 1	82-08-25	110QRNR 32 62
432646095260201	10039W27DCDB	12508	HARRIS TOWN WELL	82-08-26	112PLSC 90 --
432340095450001	09942W13DBBC	12223	SIBLEY NO 3	82-12-08	217DKOT 740 400
432345095443701	09942W13DAAC	1979	SIBLEY NO 4	82-12-08	217DKOT 750 520

PLYMOUTH					
423537095583901	09043W19CCBB	1956	KINGSLEY NO 2	82-08-04	110QRNR 37 160
423737096173201	09046W08ADDD	1956	HINTON NO 2	82-08-04	110QRNR 52 45
424305096145301	09146W11BDDD	1967	MERRILL NO 3	82-08-04	110QRNR 45 220
424528096362501	09249W27DAAB	1980	WESTFIELD NO 2	83-05-16	110QRNR 38 --
424838096161001	09246W03CCAB	1970	BRUNSVILLE CITY	82-08-05	110QRNR 30 30

424921095581501	09243W06BABA	1957	REMSEN NO 3	82-08-04	110QRNR 36 95
424921096334701	09348W31CCDD	1969	AKRON TOWN NO 5	82-08-05	112PLSC 54 100
424948096332901	09348W31BDDC	1959	AKRON TOWN NO 4	83-05-16	112PLSC 47 230
423650096175701	09046W17ACAC	1974	HLNTON NO 4	83-05-17	217DKOT 270 175
424756096095501	09245W09CAAD	1972	LE MARS NO 8	83-04-13	217DKOT 360 1000
424911096033001	09244W05AA	1953	OYENS NO 1	83-04-13	217DKOT 215 100

POTTAWATTAMIE					
411352095360801	07441W07ABBD	1981	TREYNOR NO 4	83-05-03	112PLSC 223 115

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CAC03) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
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MUSCATINE												
82-02-17	--	390	7.5	12.5	9831	190	49	16	7.1	1.5	168	11

O BRIEN												
82-09-17	15	826	7.2	14.0	9831	430	110	38	16	2.9	282	16
82-08-06	15	720	7.4	16.0	9831	380	98	33	9.3	1.1	304	9.0
82-09-17	180	780	7.1	10.0	9831	440	120	33	15	3.6	332	10
82-12-09	15	2200	7.3	10.0	9831	1200	310	96	140	8.9	293	3.0
82-12-08	10	2400	7.3	10.0	9831	1200	300	110	200	16	331	13
82-12-09	10	2200	7.5	10.0	9831	1200	310	93	120	10	354	27

OSCEOLA												
82-09-16	240	662	7.7	10.0	9831	350	95	28	6.9	2.0	233	8.5
82-09-16	15	--	7.3	12.0	9831	1200	300	98	100	9.2	369	3.0
82-08-25	420	592	7.6	11.0	9831	310	78	29	8.6	3.1	201	18
82-08-26	--	2200	7.1	11.0	9831	1300	370	96	45	12	323	.5
82-12-08	5	3000	7.2	11.0	9831	1500	370	140	270	16	324	29
82-12-08	5	2900	7.1	11.0	9831	1400	380	120	270	16	325	28

PLYMOUTH												
82-08-04	15	646	7.4	11.0	9831	340	100	23	7.4	2.5	268	7.0
82-08-04	20	1010	7.1	13.0	9831	530	150	38	16	4.7	340	22
82-08-04	15	884	7.2	13.0	9831	440	110	39	15	4.4	346	20
83-05-16	20	900	6.8	12.0	9831	440	120	34	18	4.8	274	6.5
82-08-05	15	932	7.4	12.0	9831	510	140	40	20	2.9	270	19

82-08-04	15	1070	7.2	11.0	9831	530	150	38	16	2.7	262	21
82-08-05	120	1010	7.3	14.0	9831	520	140	42	29	5.0	324	72
83-05-16	30	825	7.1	11.5	9831	380	110	25	16	7.0	271	24
83-05-17	15	700	7.6	11.0	9831	310	86	24	15	4.4	273	2.0
83-04-13	60	1400	7.3	10.5	9831	610	170	46	64	12	279	7.5
83-04-13	30	700	7.8	10.0	9831	320	91	23	16	4.8	296	.5

POTTAWATTAMIE												
83-05-03	20	770	7.1	12.0	9831	310	83	25	83	3.2	376	1.5

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
MUSCATINE												
82-02-17	16	.10	13	205	.84	<10	<100	<1	<10	<10	30	<10
O BRIEN												
82-09-17	150	.40	19	572	1.9	<10	100	<1	<10	<10	520	<10
82-08-06	51	.70	24	432	.81	<10	200	<1	<10	<10	10	<10
82-09-17	78	.40	28	509	1.7	<10	<100	<1	<10	<10	90	<10
82-12-09	1100	.60	21	1980	<.02	10	<100	<1	<10	<10	3900	<10
82-12-08	1200	.70	8.9	1180	.07	<10	100	<1	<10	<10	3400	<10
82-12-09	1000	.30	23	1980	.09	<10	<100	<1	<10	10	12000	<10
OSCEOLA												
82-09-16	110	.20	27	448	.07	<10	<100	<1	<10	<10	1500	<10
82-09-16	940	.20	32	2000	.66	<10	<100	<1	<10	<10	630	<10
82-08-25	71	.20	24	387	3.8	<10	<100	<1	<10	<10	30	<10
82-08-26	1100	.30	32	2050	<.02	20	<100	<1	<10	<10	4100	<10
82-12-08	1600	.30	17	2790	<.02	<10	<100	<1	<10	<10	3900	<10
82-12-08	1600	.30	23	2770	<.02	<10	<100	<1	<10	10	2400	<10
PLYMOUTH												
82-08-04	72	.30	25	402	.79	<10	200	<1	<10	10	140	<10
82-08-04	160	.30	27	666	4.3	<10	200	<1	<10	10	<10	<10
82-08-04	68	.30	25	509	5.9	<10	100	<1	<10	10	<10	<10
83-05-16	180	.20	26	591	6.1	<10	200	<1	<10	<10	<10	<10
82-08-05	260	.40	25	717	.95	<10	200	<1	<10	<10	1300	<10
82-08-04	220	.40	24	709	10	<10	<100	<1	<10	<10	20	<10
82-08-05	130	.30	29	705	5.4	<10	100	<1	<10	130	20	<10
83-05-16	110	.20	23	502	7.0	<10	200	<1	<10	<10	<10	<10
83-05-17	86	.40	15	381	<.02	<10	200	<1	<10	<10	460	<10
83-04-13	4.0	.90	17	1000	.02	<10	<100	<1	<10	<10	760	<10
83-04-13	71	.20	41	457	.05	<10	<100	<1	<10	<10	320	<10
POTTAWATTAMIE												
83-05-03	38	.30	27	452	<.02	<10	200	<1	<10	<10	310	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS RA-226) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
MUSCATINE												
82-02-17	50	<1.0	<10	<10	<20	.9	2.0	--	--	<10		
O BRIEN												
82-09-17	540	<1.0	<10	<10	60	6.2	4.0	.4	1.0	11		
82-08-06	<10	<1.0	<10	<10	30	5.5	9.0	<.2	.40	<10		
82-09-17	190	<1.0	<10	<10	40	3.5	4.0	.1	<.50	17		
82-12-09	500	<1.0	<10	<10	10	6.2	15	2.0	3.2	<10		
82-12-08	180	<1.0	<10	<10	30	4.6	23	1.0	2.7	<10		
82-12-09	730	<1.0	<10	<10	30	4.8	13	.4	.60	<10		
OSCEOLA												
82-09-16	400	<1.0	<10	<10	50	.9	4.0	--	--	<10		
82-09-16	110	<1.0	<10	<10	30	<.2	11	--	--	<10		
82-08-25	80	<1.0	<10	<10	20	2.5	4.0	--	--	11		
82-08-26	870	<1.0	<10	<10	90	9.3	9.0	.2	<.40	<10		
82-12-08	250	<1.0	<10	<10	10	4.3	27	1.2	.70	13		
82-12-08	240	<1.0	<10	<10	20	6.1	8.0	2.3	<.50	<10		
PLYMOUTH												
82-08-04	50	<1.0	<10	<10	10	.9	2.0	--	--	<10		
82-08-04	160	<1.0	<10	<10	40	4.8	6.0	.2	<.50	<10		
82-08-04	<10	<1.0	10	<10	10	6.6	9.0	.3	1.1	15		
83-05-16	70	<1.0	<10	<10	10	<.2	3.0	--	--	--		
82-08-05	330	<1.0	<10	<10	10	4.8	6.0	.4	<.50	<10		
82-08-04	370	<1.0	<10	<10	10	3.9	2.0	.1	.50	34		
82-08-05	110	<1.0	<10	<10	10	3.9	5.0	<.2	1.0	13		
83-05-16	140	<1.0	<10	<10	10	<.2	5.0	--	--	--		
83-05-17	220	<1.0	<10	<10	10	.3	5.0	--	--	--		
83-04-13	160	<1.0	<10	<10	<10	2.5	16	1.6	2.5	<10		
83-04-13	520	<1.0	<10	<10	30	2.3	3.0	--	--	<10		
POTTAWATTAMIE												
83-05-03	290	<1.0	<10	<10	<10	.2	4.0	--	--	<10		

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
POTTAWATTAMIE					
411356095360801	07441W07ABBA 1980 TREYNOR NO 3	83-05-03	112PLSC	248	150
SAC					
421617095051001	08636W07CDBB 1972 WALL LAKE NO 3	82-07-14	112PLSC	43	400
421826095025101	08736W33BCAA 1980 LAKE VIEW NO 5	82-07-14	112PLSC	105	300
422449094595201	08836W26ABAD 12685 1960 SAC CITY NO 2 WEST	83-01-18	112PLSC	240	480
422644095085501	08837W09DDAD 1973 EARLY NO 2	82-07-14	112PLSC	38	250
423057095052201	08936W22B8CA 18508 1966 NEMAHA	83-01-19	112PLSC	275	--
421501094522801	08635W24BBD 06210 1952 AUBURN NO 3	83-01-18	217DKOT	237	115
423013095173701	08938W26ABAA 01076 19395 CHALLER NO 1	83-01-19	217DKOT	353	80
422525094513401	08835W24ABDD 1954 LYTTON NO 3	83-01-18	364STPR	1550	250

SCOTT					
413459090463502	07802E06CDD WALCOTT 2	82-02-17	350SLRN	90	200
SHELBY					
413048095260701	07840W34BDCD 1954 SHELBY NO 3	82-03-03	111ALVM	54	50
413437095034401	07837W11AAAB 1967 ELK HORN NO 9	82-04-20	111ALVM	42	16
414407095284101	08040W14CCBD 1967 PANAMA NO 1	82-03-02	111ALVM	40	20
414622095250101	08039W05ACAA 1968 EARLING NO 1	82-03-03	111ALVM	40	15

SIOUX					
425948096295401	09448W03ABBA 1967 HAWARDEN NO 7	82-08-05	110QRNU	44	170
425756096104501	09445W17AACA 1915 MAURICE TOWN WELL	82-08-05	110QRNR	30	55
430431095542101	09543W03DBAC 1961 HOSPERS NO 3	82-08-05	110QRNR	47	55
430503096062001	09545W01ABBB 1953 SIOUX CENTER NO 2	82-08-09	110QRNR	39	110
431239096175001	09746W20ADAB 1960 ROCK VALLEY NO 3	82-09-16	110QRNR	51	300
431441095562501	09743W04CCDD 1959 MATLOCK NO 3	82-09-16	110QRNR	16	18
43150409600901	09744W02ADCD 1976 BOYDEN NO 3	82-09-16	110QRNR	37	130
425941096002701	09444W02ABCB 1939 ALTON NO 2	82-08-05	112PLSC	30	60

STORY					
415307093234701	08222W27BDD 03694 1946 MAXWELL NO 2	82-05-18	112PLSC	122	190

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPE-CIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L CACO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
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POTTAWATTAMIE												
83-05-03	30	990	7.6	11.7	9831	380	100	31	78	3.8	390	4.5
SAC												
82-07-14	15	958	7.6	12.0	9831	460	130	33	18	3.6	306	52
82-07-14	20	845	7.4	12.0	9831	2900	1100	31	15	2.4	293	18
83-01-18	20	840	7.3	11.0	9831	460	120	38	21	4.3	372	<.5
82-07-14	15	740	7.4	10.0	9831	370	100	28	13	2.9	282	21
83-01-19	20	1350	7.2	10.0	9831	560	150	45	160	3.1	815	<.5
83-01-18	15	1480	7.2	11.0	9831	730	200	57	76	5.4	392	<.5
83-01-19	20	2860	7.1	12.0	9831	1200	330	100	270	13	292	18
83-01-18	20	--	7.1	13.0	9831	750	180	74	170	24	280	16
SCOTT												
82-02-17	30	610	7.4	11.5	9831	330	84	30	8.3	.2	311	8.0
SHELBY												
82-03-03	20	695	7.3	10.8	2000	380	100	29	20	--	327	11
82-04-20	240	700	6.9	11.0	2000	330	90	25	10	4.0	241	12
82-03-02	20	700	7.3	10.7	2000	380	100	30	12	--	338	6.0
82-03-03	360	830	7.3	10.2	2000	460	130	37	16	--	287	39
SIOUX												
82-08-05	15	871	7.4	13.0	9831	420	97	43	24	10	248	32
82-08-05	15	1100	7.1	11.0	9831	530	140	44	16	2.6	328	46
82-08-05	1440	995	7.2	11.0	9831	500	140	36	32	3.3	288	20
82-08-09	45	1200	7.2	9.0	9831	700	190	54	23	3.8	290	20
82-09-16	20	813	7.3	12.0	9831	470	130	35	160	5.3	271	18
82-09-16	15	925	7.3	10.0	9831	500	130	43	23	2.7	292	18
82-09-16	840	900	7.5	14.0	9831	430	100	43	37	4.0	279	26
82-08-05	15	1230	7.2	12.0	9831	500	120	49	52	5.1	341	56
STORY												
82-05-18	30	740	--	13.0	9831	340	94	26	24	4.1	336	12

GROUND-WATER QUALITY DATA

DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
POTTAWATTAMIE												
83-05-03	150	.30	29	619	<.02	<10	200	<1	<10	<10	270	<10
SAC												
82-07-14	110	.40	25	590	2.1	<10	300	<1	<10	<10	1200	<10
82-07-14	78	.20	28	496	6.3	<10	200	<1	<10	<10	100	<10
83-01-18	110	.30	31	556	<.02	<10	<100	<1	<10	<10	2500	<10
82-07-14	41	.20	16	456	8.6	<10	200	<1	<10	<10	<10	<10
83-01-19	34	1.3	23	884	.05	<10	300	<1	<10	<10	5	<10
83-01-18	520	.30	25	1080	<.02	<10	<100	<1	<10	<10	1400	<10
83-01-19	1500	1.2	26	2680	<.02	<10	<100	<1	<10	<10	540	<10
83-01-18	830	.20	9.3	1620	.02	<10	<100	<1	<10	<10	3600	<10
SCOTT												
82-02-17	36	.30	16	375	.34	<10	300	<1	<10	<10	450	<10
SHELBY												
82-03-03	33	.33	18	498	1.7	<50	650	<2	<5	5	1800	<50
82-04-20	53	.26	18	542	.01	19	300	3	<5	<10	13200	<50
82-03-02	30	.30	19	456	<.04	<50	610	<2	<5	<2	10300	<50
82-03-03	84	.40	15	600	.10	<50	420	<2	<5	<2	8400	<50
SIOUX												
82-08-05	180	.40	20	560	.57	<10	100	<1	<10	10	30	<10
82-08-05	93	.40	24	665	17	<10	100	<1	<10	<10	10	<10
82-08-05	94	.30	21	665	17	<10	<100	<1	<10	160	120	<10
82-08-09	400	.60	20	935	.07	10	<100	<1	<10	<10	7700	<10
82-09-16	150	.20	21	610	5.9	<10	<100	<1	<10	<10	<10	<10
82-09-16	190	.30	29	704	.05	<10	<100	<1	<10	<10	2600	<10
82-09-16	180	.40	22	635	.09	<10	<100	<1	<10	<10	1800	<10
82-08-05	160	.50	19	720	7.0	<10	200	<1	<10	<10	20	<10
STORY												
82-05-18	39	.50	8.0	390	<.02	<10	100	<1	<10	<10	1600	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)	RADIUM 228, DIS-SOLVED (PCI/L) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
POTTAWATTAMIE												
83-05-03	280	<1.0	<10	<10	<10	.5	4.0	--	--	<10		
SAC												
82-07-14	450	<1.0	<10	<10	<10	9.3	12	.4	1.0	20		
82-07-14	10	<1.0	<10	<10	<10	1.2	5.0	--	--	--		
83-01-18	190	<1.0	<10	<10	<10	.4	5.0	--	--	17		
82-07-14	<10	<1.0	<10	<10	<10	.6	3.0	--	--	33		
83-01-19	90	<1.0	<10	<10	<10	10	1.0	--	--	11		
83-01-18	1100	<1.0	<10	<10	<10	40	6.2	12	<.40	22		
83-01-19	2800	<1.0	<10	<10	<10	120	2.1	5.0	--	<10		
83-01-18	40	<1.0	<10	<10	<10	20	1.3	36	--	<10		
SCOTT												
82-02-17	390	<1.0	<10	<10	<10	4.9	<.5	.6	<.50	<10		
SHELBY												
82-03-03	550	.1	<5	<5	<20	.4	5.0	--	--	--		
82-04-20	610	<.1	<5	<5	40	.6	2.0	--	--	--		
82-03-02	850	.1	<5	<5	<20	.6	1.0	--	--	--		
82-03-03	1500	.1	<5	<5	<20	1.9	3.0	--	--	--		
SIOUX												
82-08-05	270	<1.0	<10	<10	<10	10	3.5	10	.2	1.2	<10	<10
82-08-05	<10	<1.0	<10	<10	<10	30	4.9	4.0	.1	<.50	16	<10
82-08-05	200	<1.0	<10	<10	<10	90	3.2	2.0	<.2	1.1	--	--
82-08-09	1200	<1.0	<10	<10	<10	10	6.5	6.0	.5	.60	23	<10
82-09-16	60	<1.0	<10	<10	<10	30	7.5	6.0	<.2	.90	50	<10
82-09-16	550	<1.0	<10	<10	<10	30	<.2	1.0	--	--	17	<10
82-09-16	1100	<1.0	<10	<10	<10	20	1.8	6.0	--	--	13	<10
82-08-05	890	<1.0	<10	<10	<10	<40	1.0	9.0	1.0	--	<10	<10
STORY												
82-05-18	70	<1.0	<10	<10	<10	<10	1.5	4.0	--	--	11	<10

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (GPM) (00058)
TAYLOR					
403659094285301	06732W12CAAD	1960	BLOCKTON NO 1	83-04-11	112PLSC 271 100
404454094372901	06933W27DAAA	1971	CONWAY NO 1	83-04-11	112PLSC 56 35
VAN BUREN					
403926092094902	06811W30AACB	1967	MILTON NO 3	82-02-19	112PLSC 110 46
WAPELLO					
410905092375901	07315W06CACD	1952	EDDYVILLE NO 1	83-09-07	112PLSC 36 105
WARREN					
413035093285501	07723W03DDDD		CARLISLE NO 3	82-03-16	111ALVM 48 150
411342093432601	07425W10BDC	2212B 1969	NEW VIRGINIA NO 2	82-03-16	112PLSC 45 --

WASHINGTON					
412849091343301	07706W17BBDD	23288 1973	RIVERSIDE NO 6	83-03-30	111ALVM 240 200
412855091430001	07708W13AABA	15867 1963	KALONA NO 2	83-03-30	112PLSC 62 240
412856091430601	07708W13AABB	1972	KALONA NO 3	83-03-30	112PLSC 58 300
412013091485701	07608W31DDCC	08701 1957	WEST CHESTER NO 1	83-03-31	339WSVL 243 100
WINNEBAGO					
431556093375401	09824W26DDCC	00304 1934	FOREST CITY NO 2	82-03-18	344CDVL 142 1400
432016093380301	09824W01BCBD	1971	LELAND NO 1	83-02-11	3600DVC 310 100
432851093551801	10026W15ABCD	00967 1939	RAKE NO 1	82-03-18	3600DVC 200 50
432218093462301	09925W23CCCC		THOMPSON NO 1	83-02-11	361MQKT 249 250

WINNESHIEK					
431816091474401	09808W16CABD	1958	DECORAH NO 2	82-05-11	364STPR 60 425
WOODBURY					
421406096134501	08646W29CBAB	1980	SLOAN NO 3	82-09-14	111ALVM 105 300

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	HARDNESS (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
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TAYLOR												
83-04-11	378	1700	7.9	13.5	9831	130	34	10	340	4.4	418	100
83-04-11	360	670	6.6	13.0	9831	280	79	20	26	1.8	154	30
VAN BUREN												
82-02-19	30	1100	7.4	14.0	9831	480	120	44	79	5.8	542	3.0
WAPELLO												
83-09-07	120	759	7.4	16.0	9831	390	110	28	11	1.3	233	3.0
WARREN												
82-03-16	60	525	7.3	11.0	9831	260	71	21	6.9	2.6	185	13
82-03-16	--	485	6.8	11.5	9831	230	72	13	11	<.1	237	4.0
WASHINGTON												
83-03-30	30	710	7.8	12.2	9831	190	46	19	93	4.5	412	2.5
83-03-30	240	700	6.7	11.2	9831	310	70	32	23	1.4	199	45
83-03-30	40	500	6.8	10.2	9831	240	55	25	11	.8	189	19
83-03-31	30	780	7.4	12.1	9831	320	67	38	52	3.6	383	.5
WINNEBAGO												
82-03-18	30	723	7.3	9.0	9831	380	100	32	16	2.5	369	.5
83-02-11	10	720	7.4	9.0	9831	350	87	32	24	4.3	380	.5
82-03-18	60	1050	7.3	9.0	9831	220	60	18	150	2.8	418	1.5
83-02-11	10	723	7.2	9.0	9831	350	89	30	38	4.7	392	1.0
WINNESHIEK												
82-05-11	360	565	7.5	9.0	9831	290	78	23	6.3	1.3	239	13
WOODBURY												
82-09-14	60	1040	7.2	12.0	9831	510	120	52	38	8.9	--	30

GROUND-WATER QUALITY DATA

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DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
TAYLOR												
83-04-11	250	.80	12	1080	.02	<10	400	<1	<10	<10	610	<10
83-04-11	130	.20	35	475	.11	<10	300	<1	<10	<10	26000	<10
VAN BUREN												
82-02-19	100	.20	25	701	.09	<10	200	<1	<10	<10	620	<10
WAPELLO												
83-09-07	190	.10	16	540	3.2	<10	<100	<1	<10	<10	140	<10
WARREN												
82-03-16	70	.20	22	340	<.10	<10	100	<1	<10	10	370	<10
82-03-16	22	.30	25	300	<.02	<10	300	<1	<10	<10	12000	<10
WASHINGTON												
83-03-30	5.0	.10	11	406	<.02	<10	400	<1	<10	<10	190	<10
83-03-30	100	.15	21	433	<.02	<10	200	<1	<10	<10	4400	<10
83-03-30	57	.25	19	315	<.02	<10	100	<1	<10	<10	370	<10
83-03-31	80	.25	13	474	<.02	<10	<100	<1	<10	<10	1100	<10
WINNEBAGO												
82-03-18	40	.40	21	508	<.02	<10	200	<1	<10	<10	1100	<10
83-02-11	33	.30	16	436	<.02	<10	200	<1	<10	20	960	<10
82-03-18	160	.40	20	674	<.02	<10	<100	<1	<10	<10	790	<10
83-02-11	21	.30	19	433	<.02	<10	300	<1	<10	10	1300	<10
WINNESHIEK												
82-05-11	26	.20	4.8	317	3.6	<10	<100	<1	<10	<10	<10	<10
WOODBURY												
82-09-14	63	.40	36	646	--	<10	--	<1	<10	<10	5600	<10
DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS RA-228) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS RA-228) (81366)	RADON 222 DISSOLV (PC/L) (82305)		
TAYLOR												
83-04-11	50	--	<10	<10	10	.5	4.0	--	--	--	--	--
83-04-11	3900	<1.0	<10	<10	10	1.6	4.0	--	--	31	--	--
VAN BUREN												
82-02-19	<10	<1.0	<10	<10	10	1.8	4.0	--	--	<10	--	--
WAPELLO												
83-09-07	40	<1.0	<10	<10	20	1.6	3.0	--	--	--	--	--
WARREN												
82-03-16	270	<1.0	<10	<10	<10	1.8	2.0	--	--	<10	--	--
82-03-16	1500	<1.0	<10	<10	<10	20	2.6	4.0	--	--	<10	--
WASHINGTON												
83-03-30	30	<1.0	<10	<10	<10	<.1	3.0	--	--	<10	--	--
83-03-30	210	<1.0	<10	<10	10	.6	<.3	--	--	<10	--	--
83-03-30	80	<1.0	<10	<10	10	.6	1.0	--	--	<10	--	--
83-03-31	<10	<1.0	<10	<10	<10	2.1	1.0	--	--	<10	--	--
WINNEBAGO												
82-03-18	60	<1.0	<10	<10	10	9.2	6.0	4.5	<.50	58	--	--
83-02-11	80	<1.0	<10	<10	20	2.2	5.0	--	--	15	--	--
82-03-18	40	<1.0	<10	<10	<10	<.1	<.3	--	--	32	--	--
83-02-11	80	<1.0	<10	<10	20	<.1	7.0	--	--	19	--	--
WINNESHIEK												
82-05-11	<10	<1.0	<10	<10	<10	<.1	<.5	--	--	15	--	--
WOODBURY												
82-09-14	280	<1.0	--	<10	<10	--	9.0	--	--	--	--	--

GROUND-WATER QUALITY DATA

STATION NUMBER	STATION NAME	DATE OF SAMPLE	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE (GPM)
WORTH					
431943093041801	09819W03DCDC 00700 1938	82-03-19	344CDVL	172	100
432642093132101	10020W29DDDC 1931	83-02-10	344CDVL	162	--
WRIGHT					
423954093535801	09126W27DB 1952	82-03-16	112PLSC	70	380
424405093551511	09226W33DCBB 1915	83-05-05	112PLSC	200	280
424135093362801	09123W18DBCA 1945	82-03-16	330MSSP	165	27
423359093503001	09025W31ACC 05762 1952	82-03-17	333STLS	120	100
424349093440001	09124W06BBBD 10665 1958	83-05-05	339GLMC	300	900
424352093435901	09124W05BBBA 1905	83-05-05	339HMPN	280	450
425058093363901	09323W19CDCC 09241 1958	83-05-05	339HMPN	208	450
425058093364001	09323W19CDCC 1911	83-05-05	339HMPN	520	450
424422093324001	09223W34ACC 02929 1947	83-02-09	339KDRK	225	75

DATE OF SAMPLE	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	AGENCY ANALYZING SAMPLE (CODE NUMBER)	HARDNESS (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY (MG/L AS CaCO3)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)
WORTH												
82-03-19	30	485	7.2	10.0	9831	180	67	3.0	6.1	<.1	245	5.5
83-02-10	--	621	7.0	10.0	9831	340	93	26	6.4	1.8	299	9.5
WRIGHT												
82-03-16	360	660	7.3	11.0	9831	390	98	35	16	4.4	390	1.0
83-05-05	240	753	7.0	11.0	9831	370	95	32	25	3.6	382	<.5
82-03-16	60	--	7.2	10.0	9831	360	95	31	8.5	4.5	363	1.0
82-03-17	30	794	7.0	9.0	9831	390	92	40	25	5.4	384	1.0
83-05-05	10	672	7.1	10.5	9831	360	93	30	11	3.6	369	1.5
83-05-05	10	682	7.1	11.0	9831	360	93	30	12	3.6	371	1.0
83-05-05	20	646	7.2	11.0	9831	320	83	28	16	1.5	339	3.0
83-05-05	180	643	7.2	12.0	9831	290	85	20	16	1.8	346	3.5
83-02-09	60	649	7.4	10.0	9831	330	92	25	17	2.7	371	.5

GROUND-WATER QUALITY DATA

DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) (00515)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
WORTH												
82-03-19	22	.25	18	274	<.10	<10	200	<1	<10	<10	360	<10
83-02-10	37	.10	20	375	<.02	<10	100	<1	<10	<10	1500	<10
WRIGHT												
82-03-16	33	1.4	32	475	<.02	<10	300	<1	<10	<10	2500	<10
83-05-05	67	.20	26	459	<.02	<10	<100	<1	<10	<10	850	<10
82-03-16	13	.25	27	407	<.02	<10	<100	<1	<10	<10	1600	<10
82-03-17	64	.55	23	507	<.02	<10	200	<1	<10	<10	3400	<10
83-05-05	29	.20	20	407	<.05	<10	200	<1	<10	<10	1200	<10
83-05-05	28	.20	21	392	<.02	<10	300	<1	<10	<10	2100	<10
83-05-05	33	.30	19	364	<.02	<10	500	<1	<10	<10	2200	<10
83-05-05	30	.30	18	380	<.02	<10	500	<1	<10	<10	2000	<10
83-02-09	7.1	.40	13	380	<.02	<10	300	<1	<10	20	1200	<10

DATE OF SAMPLE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L AS Radium 226) (09503)	RADIUM 228, DIS-SOLVED (PCI/L AS Radium 228) (81366)	RADON 222 DISSOLV (PC/L AS Radon 222) (82305)
WORTH										
82-03-19	160	<1.0	<10	<10	20	1.9	1.0	--	--	25
83-02-10	250	<1.0	<10	<10	10	.9	4.0	--	--	14
WRIGHT										
82-03-16	190	<1.0	<10	<10	<10	1.9	2.0	--	--	12
83-05-05	800	<1.0	<10	<10	10	1.3	2.0	--	--	12
82-03-16	210	<1.0	<10	<10	<10	15	4.0	7.9	--	26
82-03-17	120	<1.0	<10	<10	10	2.4	2.0	.0	<.50	21
83-05-05	230	<1.0	<10	<10	<10	2.2	1.0	--	--	13
83-05-05	240	<1.0	<10	<10	20	1.9	1.0	--	--	<10
83-05-05	180	<1.0	<10	<10	20	<.2	2.0	--	--	24
83-05-05	160	<1.0	<10	<10	70	<.1	1.4	--	--	33
83-02-09	80	<1.0	<10	<10	20	.7	5.0	--	--	14

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

Samples are collected at sites other than gaging stations and partial-records stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, WATER YEARS OCTOBER 1980 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
05454000 RAPID CREEK NEAR IOWA CITY, IOWA						
WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983						
JUN 28...	0925	366	--	2960	2930	95
05487700 WHITE BREAST CR NR WOODBURN, IOWA						
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
APR 15...	1800	71	13.3	496	95	96
JUN 02...	0830	3.5	20.5	36	.34	89
AUG 26...	0930	.82	21.2	54	.12	91
05487810 WHITE BREAST C NR LUCAS, IA						
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980						
JUN 18...	1000	20	21.8	107	5.7	96
JUL 15...	1030	2.4	27.8	30	.19	92
AUG 12...	1330	.50	25.4	29	.04	--
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT 21...	1330	<1.0	12.0	18	--	98
APR 15...	1700	247	14.9	1430	954	93
JUN 02...	0930	5.4	21.3	66	.96	84
JUL 28...	1630	74	19.4	359	72	73
AUG 26...	1015	2.7	21.8	53	.39	78
05487880 WHITE BREAST C NR LACONA, IA						
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
APR 15...	1530	470	15.0	2540	3220	92
JUN 02...	1000	8.9	22.0	85	2.0	88
AUG 26...	1130	5.5	22.0	67	.99	91
05487980 WHITE BREAST CREEK NEAR DALLAS, IOWA						
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980						
JUN 18...	1200	70	20.6	323	61	98
JUL 15...	1230	9.2	32.6	59	1.5	83
AUG 12...	1430	3.6	28.5	32	.31	--
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT 21...	1515	66.0	13.5	33	--	79
APR 15...	1230	1040	14.3	3190	8960	93
JUN 02...	1100	12	23.4	60	1.9	96
JUL 28...	1800	191	20.1	206	106	95
AUG 26...	1230	10	23.4	80	2.2	83

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
 WATER QUALITY DATA, WATER YEARS OCTOBER 1980 TO SEPTEMBER 1983--Continued

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
------	------	--	--	---	---	--

05488000 WHITE BREAST CREEK NR KNOXVILLE, IOWA

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

APR						
15...	1000	1840	12.3	3800	18900	91
JUN						
02...	1400	12	24.2	38	1.3	94
AUG						
26...	1530	12	25.0	154	5.1	99

05488180 ENGLISH C NR COLUMBIA, IA

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

APR						
15...	1430	28	14.3	394	30	97
JUN						
02...	1200	.01	20.7	10	.00	95
AUG						
25...	1400	.32	22.8	31	.03	58

05488200 ENGLISH CR NR KNOXVILLE, IOWA

WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

JUN						
18...	1300	25	19.9	207	14	98
JUL						
15...	1330	.70	29.9	21	.04	84

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

APR						
15...	1115	81	11.4	955	210	95
JUN						
02...	1300	.39	20.7	73	.08	92
AUG						
25...	1500	.81	21.8	142	.31	98

05488300 ENGLISH R NR HARVEY, IOWA

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

APR						
15...	0815	209	10.7	2170	1220	100
JUN						
02...	1530	<1.0	23.1	47	--	99
AUG						
25...	1700	1.1	23.2	49	.15	99

05488550 CEDAR CR AT MELROSE, IOWA

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

APR						
14...	1130	56	10.7	1480	224	97
JUN						
01...	1800	.52	25.4	25	.04	89
AUG						
25...	1800	.82	24.8	35	.08	93

05488600 CEDAR CR NR ALBIA, IOWA

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

OCT						
21...	1200	<1.0	12.5	21	--	58
APR						
14...	1000	707	10.8	5150	9830	93
JUN						
01...	1700	2.2	25.9	16	.10	81
JUL						
28...	1100	107	17.9	1190	344	89
AUG						
25...	1715	4.0	24.2	38	--	83

05488700 CEDAR CR NR LOVILIA, IOWA

WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

APR						
16...	1500	88	14.0	148	35	--
JUN						
16...	1400	358	20.1	1840	1780	--
JUL						
14...	1500	7.7	32.0	49	1.0	--
AUG						
12...	1100	5.4	22.8	43	.63	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
 WATER QUALITY DATA, WATER YEARS OCTOBER 1980 TO SEPTEMBER 1983--Continued

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
05488700 CEDAR CR NR LOVILIA, IOWA						
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT						
21...	1015	3.1	10.0	39	.33	62
APR						
13...	1430	227	18.5	1380	846	97
JUN						
01...	1600	6.5	25.3	42	.74	84
AUG						
25...	1545	9.9	24.7	43	1.1	95
05488750 CEDAR CREEK NR HAMILTON, IA						
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980						
AUG						
13...	0830	5.2	23.1	75	1.1	--
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT						
21...	0900	E3.5	10.0	41	.39	100
APR						
13...	1500	E275	18.4	1780	--	98
JUN						
01...	1500	9.5	25.2	65	1.7	91
JUL						
27...	1630	215	19.3	2600	1510	100
AUG						
25...	1400	19	24.1	98	5.0	97
05488895 N CEDAR C NR ATTICA, IA						
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980						
APR						
16...	1200	18	14.0	94	4.6	--
JUN						
16...	1700	65	19.7	530	92	--
JUL						
14...	1600	2.3	31.0	31	.19	--
AUG						
11...	1800	4.3	26.4	78	.91	--
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT						
20...	1700	<1.0	15.0	57	--	75
APR						
13...	1200	63	18.2	1250	211	85
JUN						
01...	1200	.52	23.8	39	.05	86
JUL						
27...	1800	91	18.8	964	237	91
AUG						
25...	1500	2.5	24.5	65	.44	97
05488990 N CEDAR C NR BUSSEY, IA						
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980						
APR						
16...	0900	38	9.0	64	6.6	--
JUN						
16...	2015	163	20.1	1100	484	--
JUL						
14...	1400	6.9	29.0	74	1.4	89
AUG						
11...	1500	8.7	26.8	53	1.2	--
WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981						
OCT						
20...	1500	.84	14.0	11	.02	75
APR						
13...	1600	156	17.5	1230	518	97
JUN						
01...	1330	2.3	22.3	57	.35	95
JUL						
27...	1530	175	19.2	1170	553	95
AUG						
25...	1330	12	24.0	85	2.7	98

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
 WATER QUALITY DATA, WATER YEARS OCTOBER 1980 TO SEPTEMBER 1983--Continued

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	TEMPER- ATURE (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
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05489000 CEDAR CREEK NEAR BUSSEY, IOWA
 WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

APR						
15...	1600	173	14.0	261	122	--
JUN						
17...	1300	433	19.9	807	943	--
JUL						
14...	1200	15	27.5	61	2.4	--
AUG						
13...	0930	13	22.0	101	3.5	--

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

OCT						
20...	1345	4.6	15.0	20	.25	98
APR						
13...	1700	424	17.4	2020	2310	99
JUN						
01...	1230	14	22.5	60	2.3	95
JUL						
27...	1430	272	19.2	794	583	98
AUG						
25...	1230	37	24.0	74	7.5	95

05489030 CEDAR C NR TRACY, IA

WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

APR						
15...	1430	252	9.0	275	187	--
JUN						
17...	1800	337	20.1	896	815	--
JUL						
14...	1100	25	29.4	75	5.1	--
AUG						
13...	1130	15	25.3	16	.64	--

WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

OCT						
20...	1200	6.7	17.0	20	.36	100
APR						
13...	1800	743	17.6	2460	4940	99
JUN						
01...	1130	16	24.4	84	3.7	92
JUL						
27...	1330	164	18.6	736	326	99
AUG						
25...	1130	48	23.0	80	10	98

E Estimated
 < Less than indicated discharge

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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